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Torres et al.

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(45) **Date of Patent: Jan. 3, 2012**

(54) **DYNAMIC CONTENT CHANGE NOTIFICATION**

(75) Inventors: **Michael I. Torres**, Seattle, WA (US); **Stephen P. Rosato**, Woodinville, WA (US); **Jason C. Fluegel**, Seattle, WA (US); **Thomas A. Jeyaseelan**, Kirkland, WA (US); **DeEtte M. Day**, Seattle, WA (US); **Eyal Z. Axelrod**, Redmond, WA (US); **German A. Gil**, Redmond, WA (US)

(73) Assignee: **Microsoft Corporation**, Redmond, WA (US)

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(21) Appl. No.: **10/978,558**

(22) Filed: **Nov. 1, 2004**

(65) **Prior Publication Data**

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(51) **Int. Cl.**
G06F 15/16 (2006.01)

(52) **U.S. Cl.** **709/206**; 709/204; 709/205

(58) **Field of Classification Search** 709/206, 709/207

See application file for complete search history.

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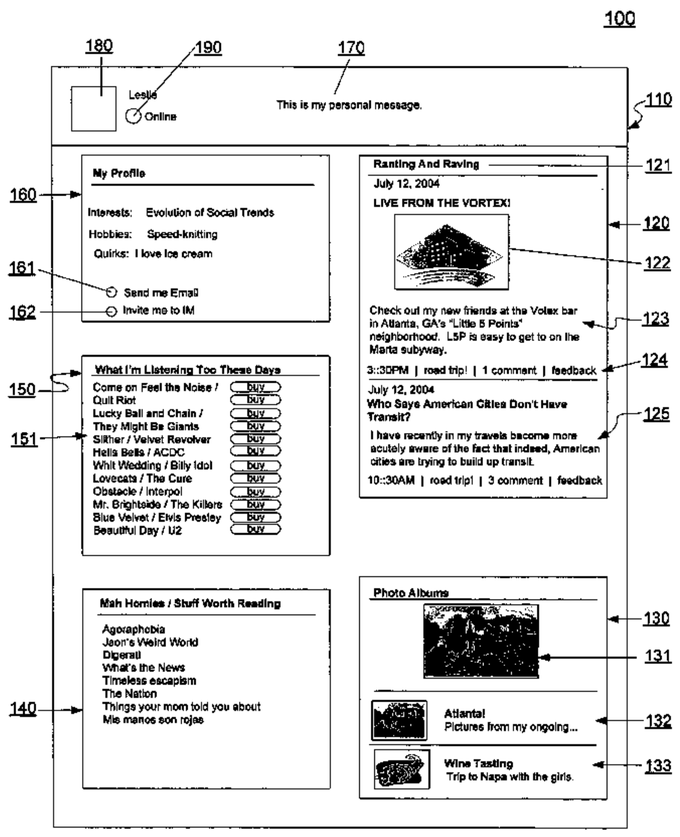
(Continued)

Primary Examiner — Jeffrey Pwu
Assistant Examiner — Shaq Taha

(57) **ABSTRACT**

A content page is configured by a user and located on a network. Changes made to the content page are automatically communicated with notifications to a group of contacts for the user. Only contacts with permission to view the content page, or the changed content, will receive the notification and have permission to view the changes. A visual indicator notifies contacts that a content page of one of their contacts has been changed. When the visual indicator or some other contact indicator is selected by the user, a summary module can be provided. The summary module is a portal to network content, including the content page.

33 Claims, 19 Drawing Sheets



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Response to Office Action dated Jun. 3, 2009, U.S. Appl. No. 10/978,993, filed Nov. 1, 2004.

Notice of Allowance and Fee(s) Due dated Sep. 1, 2009 in U.S. Appl. No. 10/978,993.

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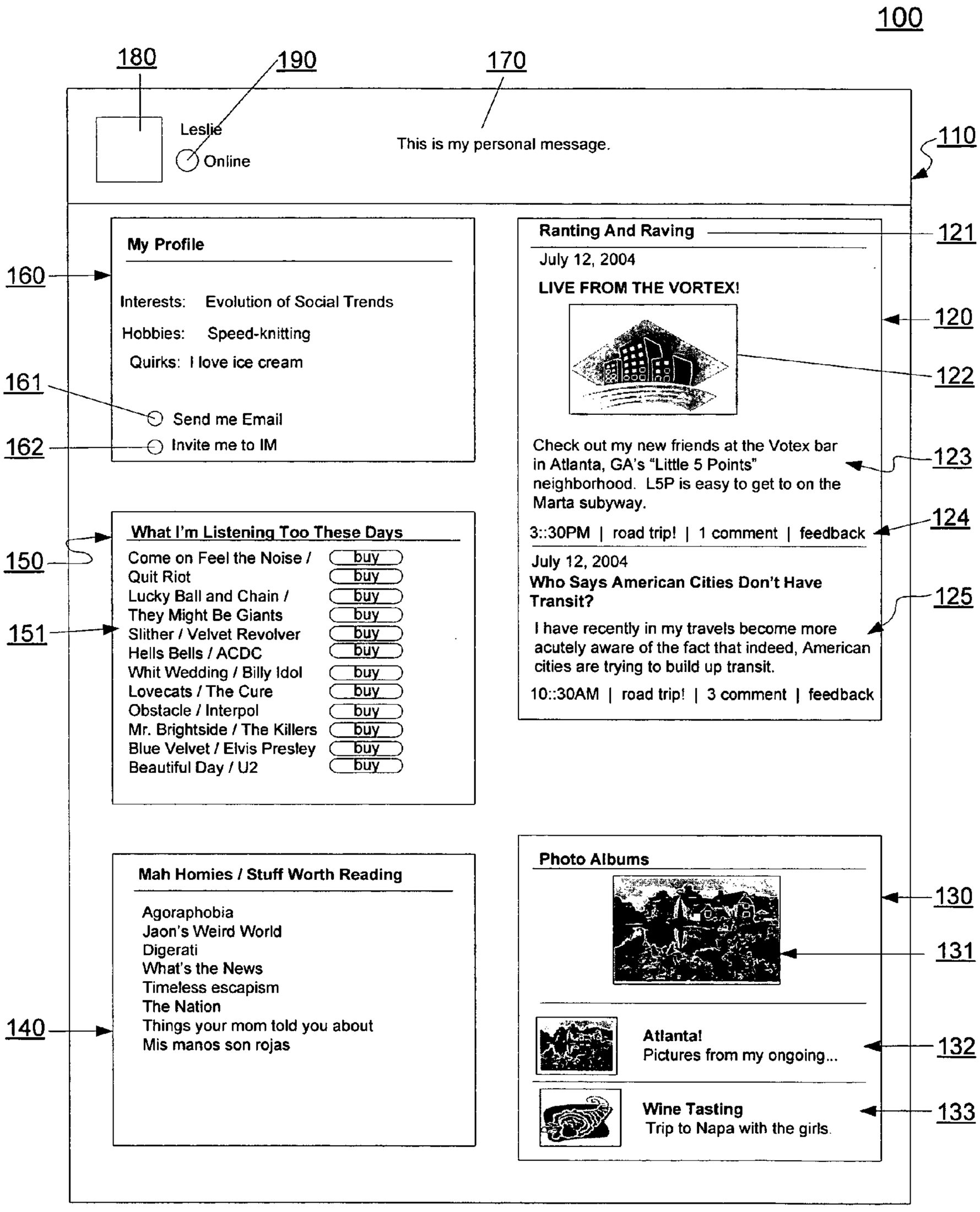

100
180
190
170
Leslie
Online
This is my personal message.
110
My Profile
160
Interests: Evolution of Social Trends
Hobbies: Speed-knitting
Quirks: I love ice cream
161
Send me Email
162
Invite me to IM
Ranting And Raving
121
July 12, 2004
LIVE FROM THE VORTEX!
120
122
Check out my new friends at the Votex bar in Atlanta, GA's "Little 5 Points" neighborhood. L5P is easy to get to on the Marta subyway.
123
3::30PM | road trip! | 1 comment | feedback
124
July 12, 2004
Who Says American Cities Don't Have Transit?
125
I have recently in my travels become more acutely aware of the fact that indeed, American cities are trying to build up transit.
10::30AM | road trip! | 3 comment | feedback
What I'm Listening Too These Days
150
151
Come on Feel the Noise / Quit Riot buy
Lucky Ball and Chain / They Might Be Giants buy
Slither / Velvet Revolver buy
Hells Bells / ACDC buy
Whit Wedding / Billy Idol buy
Lovecats / The Cure buy
Obstacle / Interpol buy
Mr. Brightside / The Killers buy
Blue Velvet / Elvis Presley buy
Beautiful Day / U2 buy
Photo Albums
130
131
132
Atlanta!
Pictures from my ongoing...
133
Wine Tasting
Trip to Napa with the girls.
Mah Homies / Stuff Worth Reading
140
Agoraphobia
Jaon's Weird World
Digerati
What's the News
Timeless escapism
The Nation
Things your mom told you about
Mis manos son rojas

Figure 1

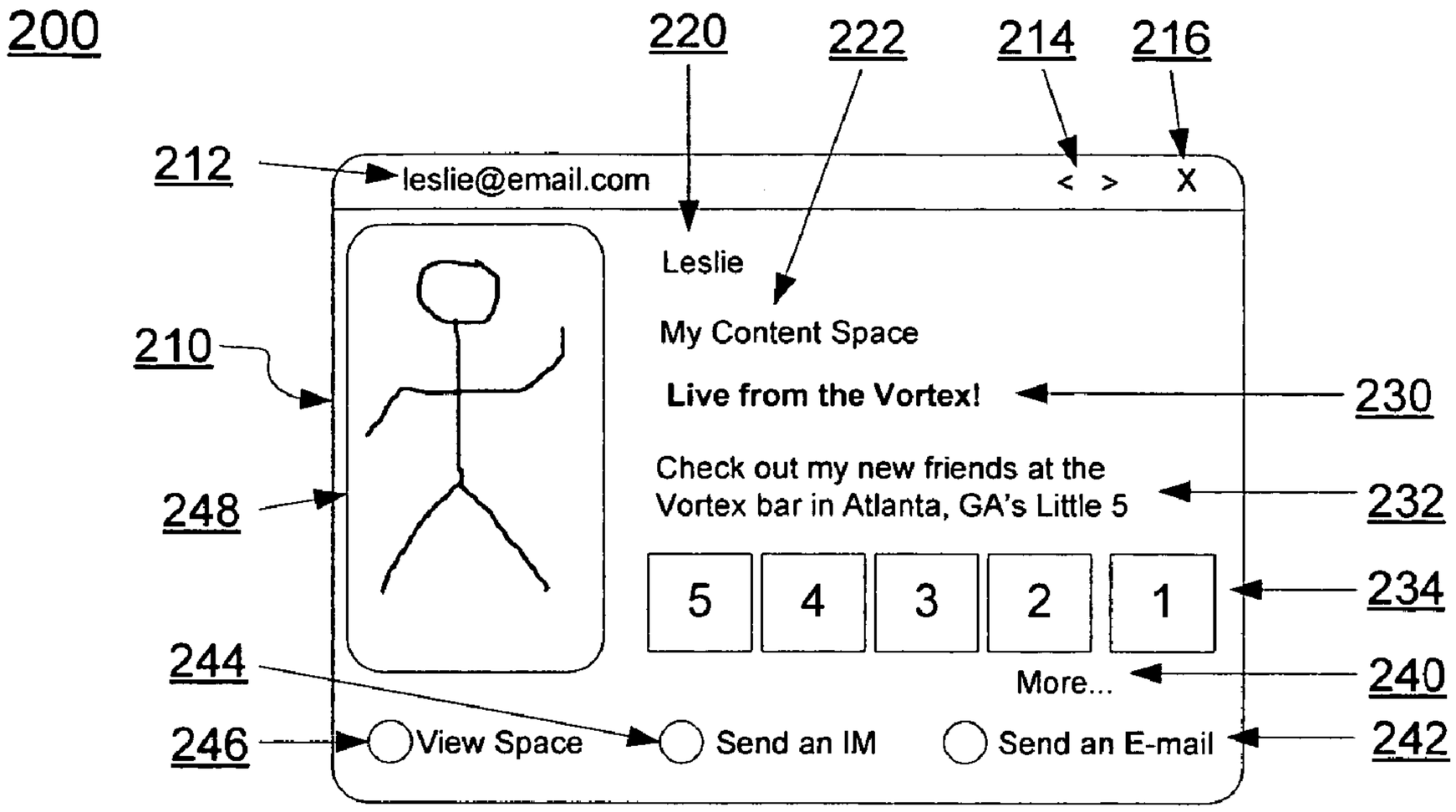


Figure 2A

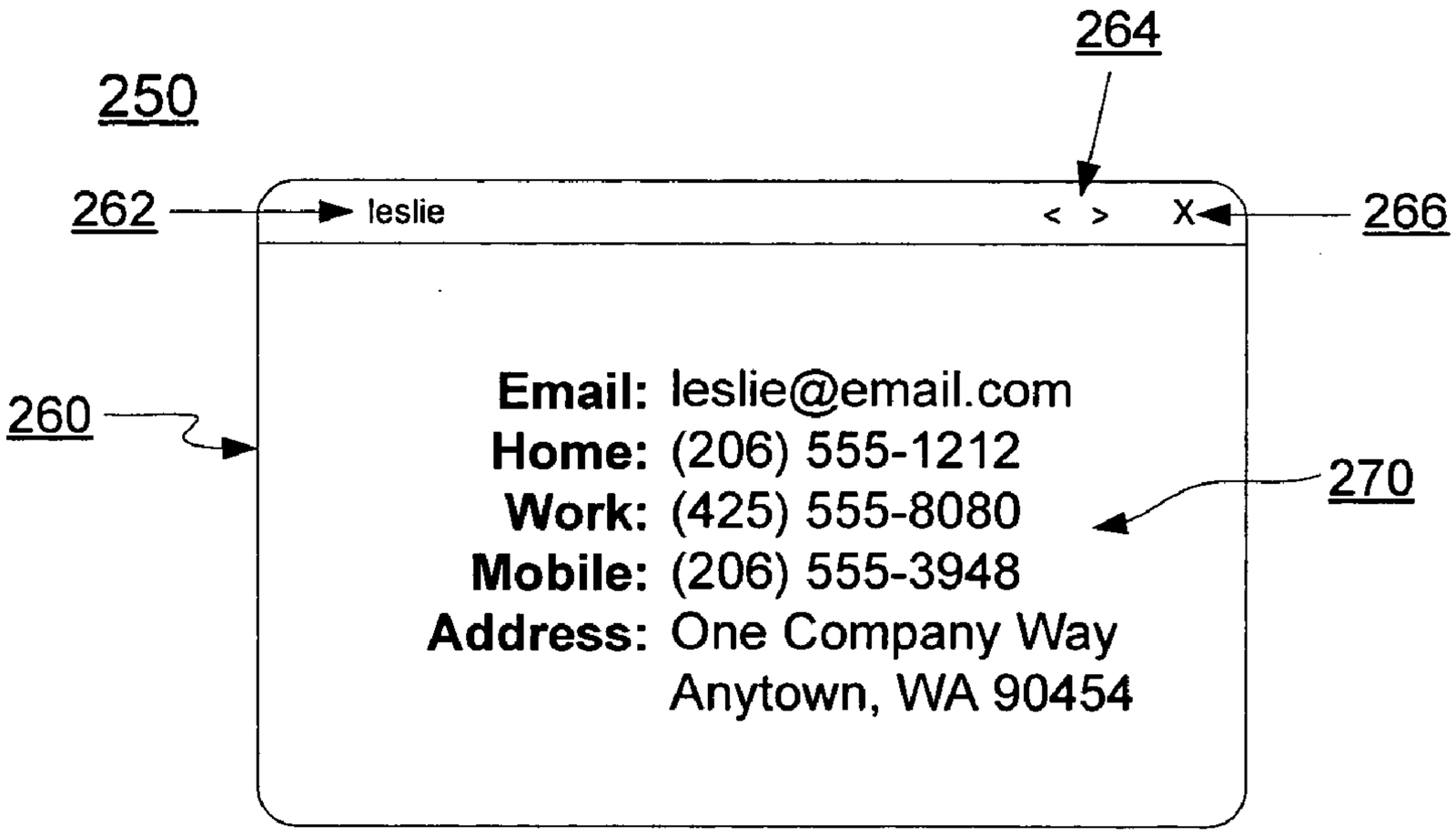


Figure 2B

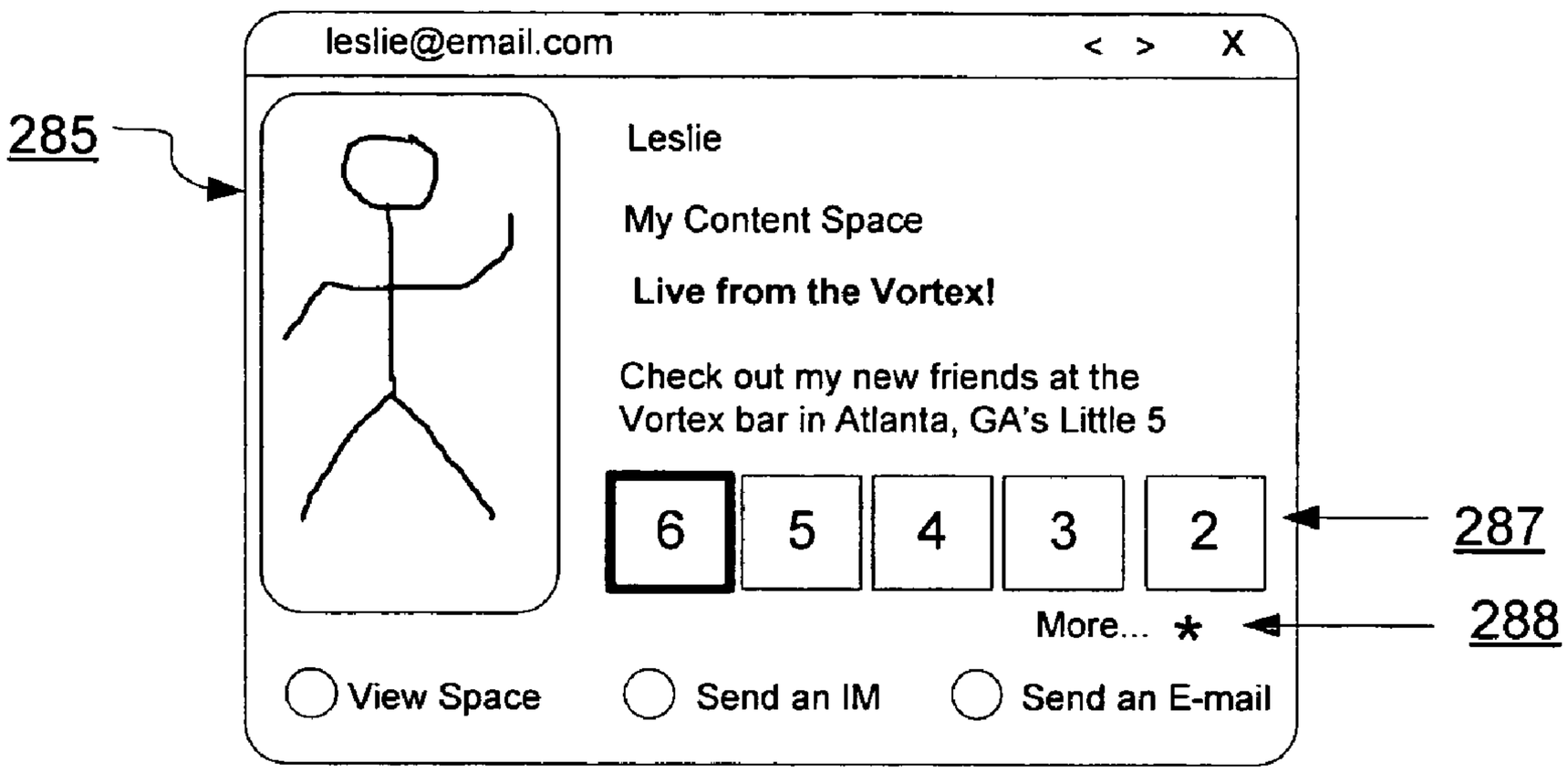


Figure 2C

Figure 2D

Figure 3A

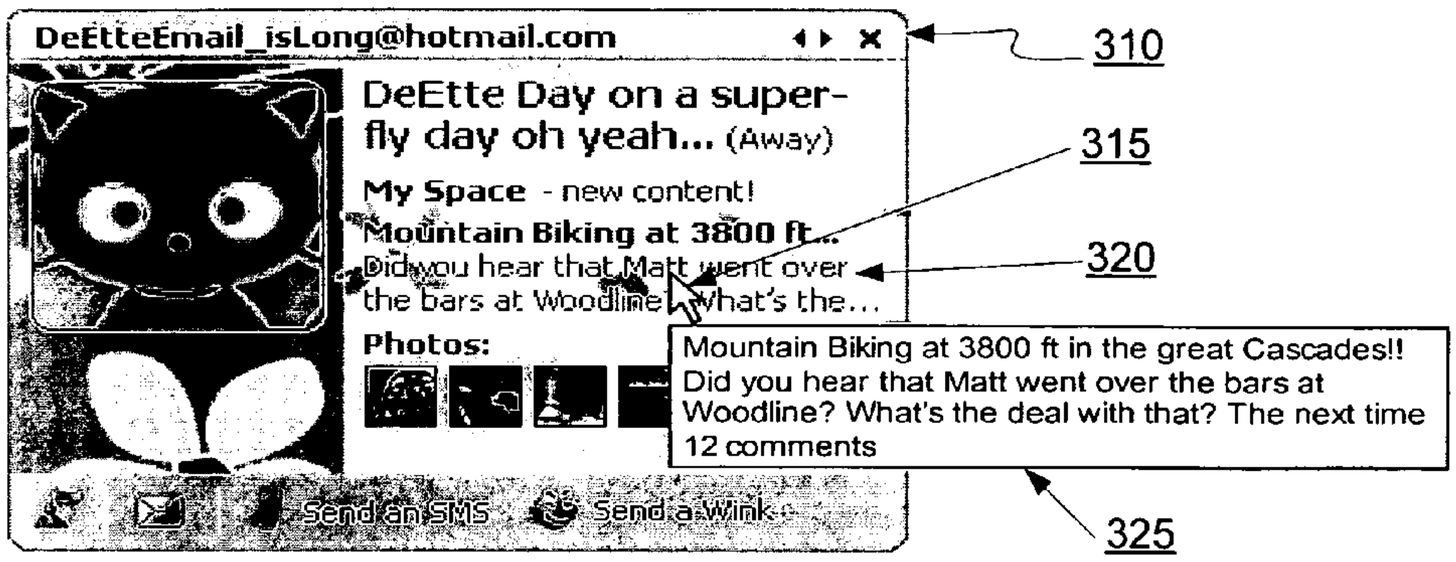


Figure 3B

Figure 3C

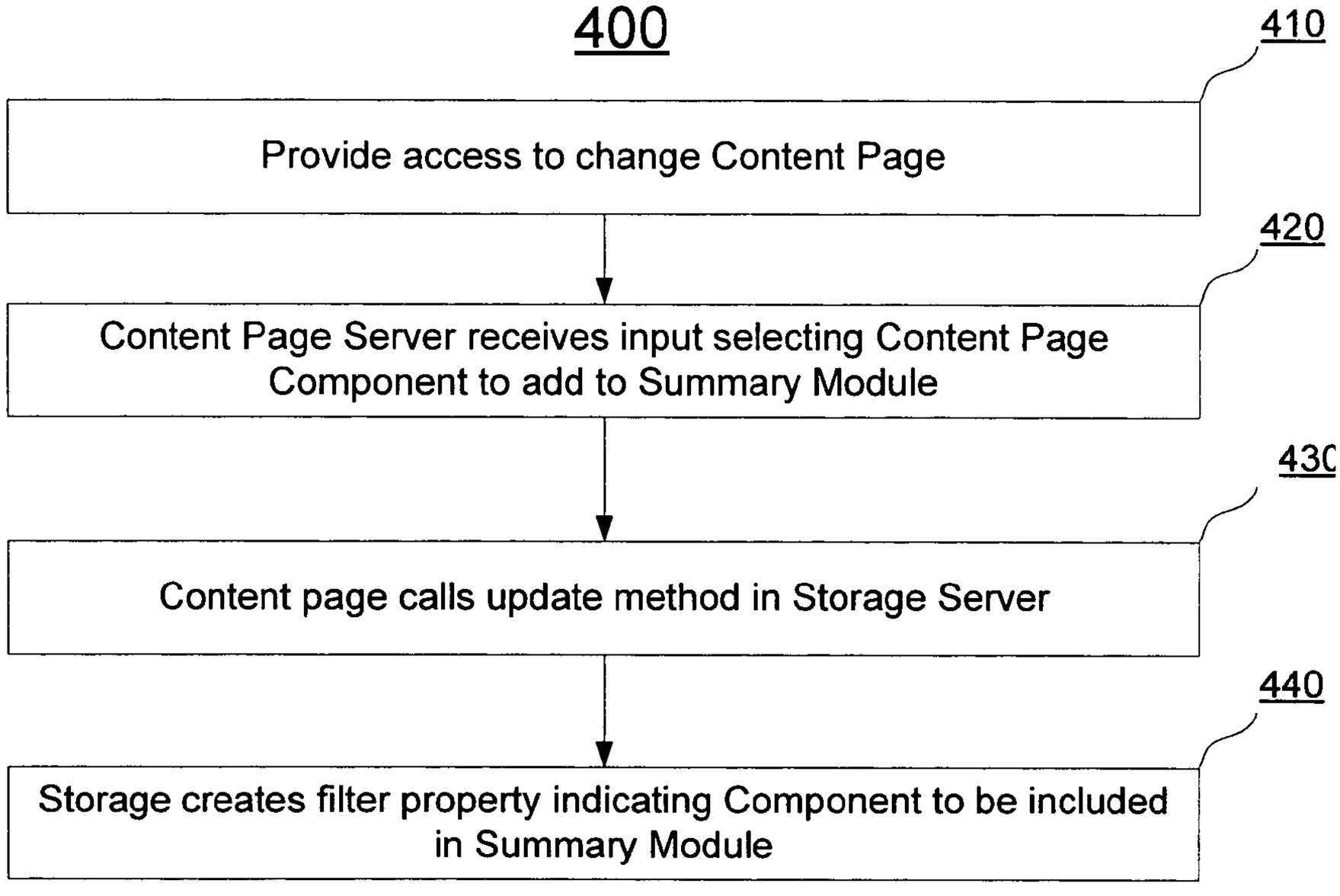

400
410
Provide access to change Content Page
420
Content Page Server receives input selecting Content Page Component to add to Summary Module
430
Content page calls update method in Storage Server
440
Storage creates filter property indicating Component to be included in Summary Module

Figure 4

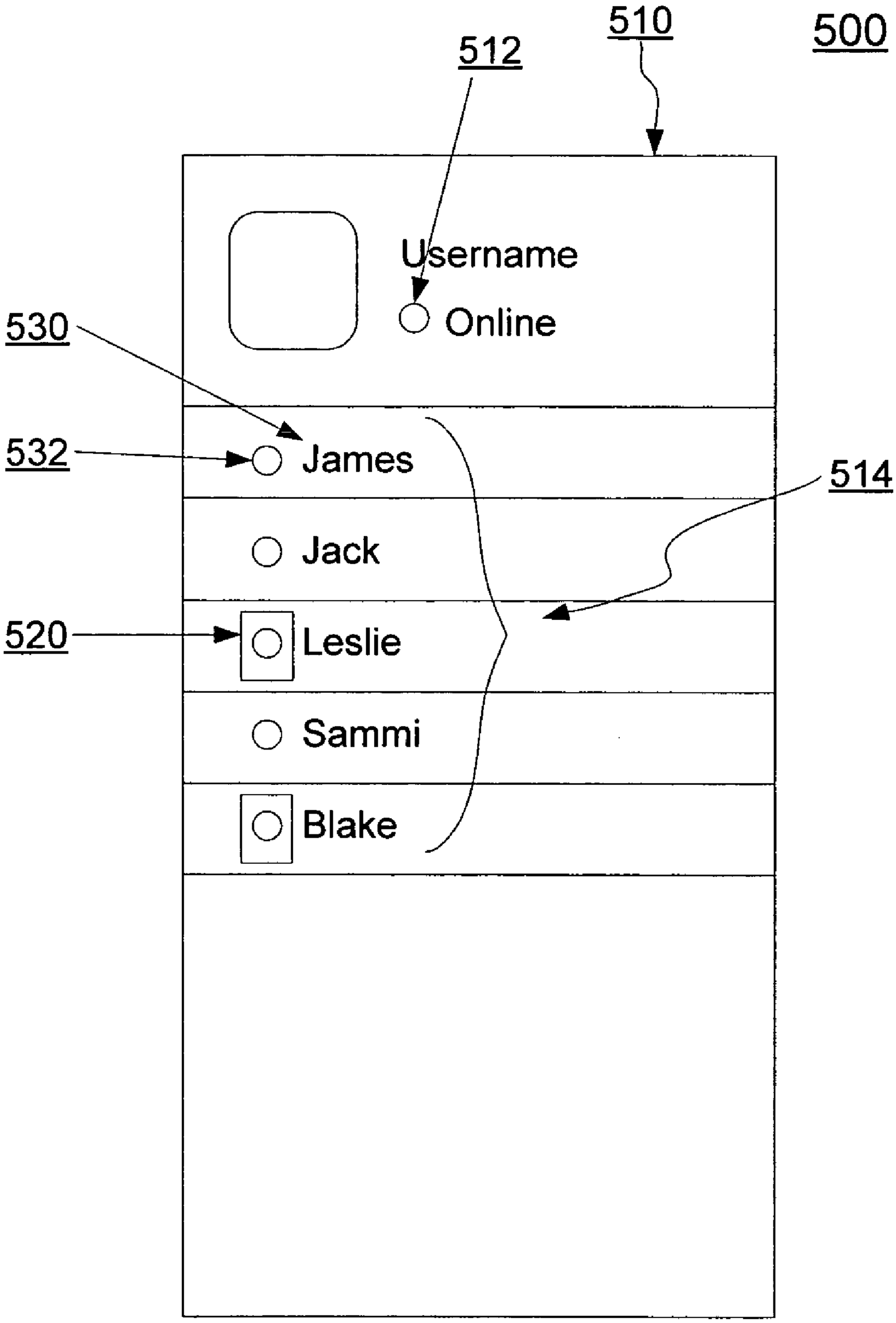

500
510
512
Username
Online
530
532
James
514
Jack
520
Leslie
Sammi
Blake

Figure 5

600

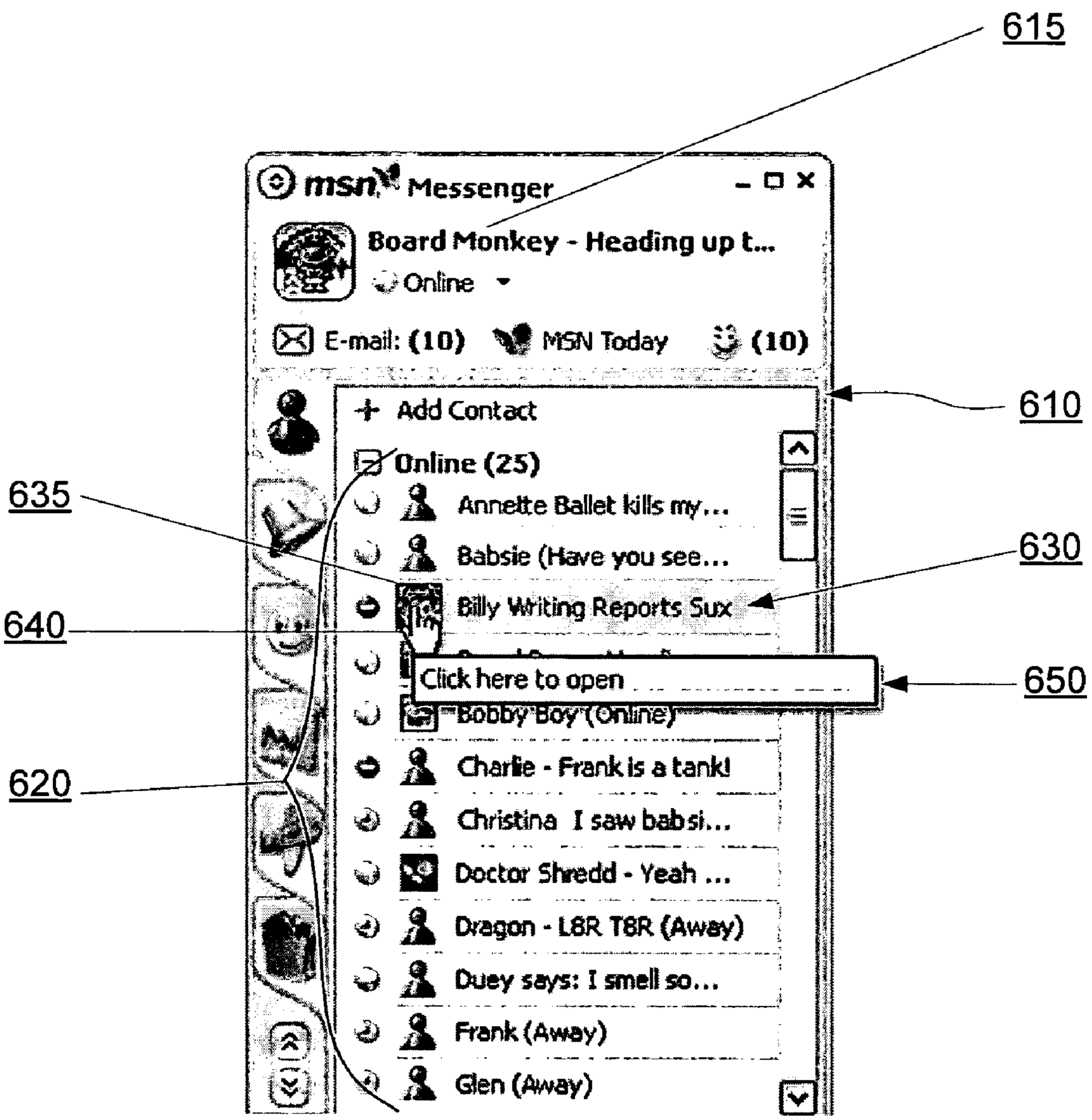

615
msn Messenger
Board Monkey - Heading up t...
Online
E-mail: (10)
MSN Today
(10)
610
Add Contact
Online (25)
635
Annette Ballet kills my...
Babsie (Have you see...
630
Billy Writing Reports Sux
640
Click here to open
650
Bobby Boy (Online)
620
Charlie - Frank is a tank!
Christina I saw babsi...
Doctor Shredd - Yeah ...
Dragon - L8R T8R (Away)
Duey says: I smell so...
Frank (Away)
Glen (Away)

Figure 6

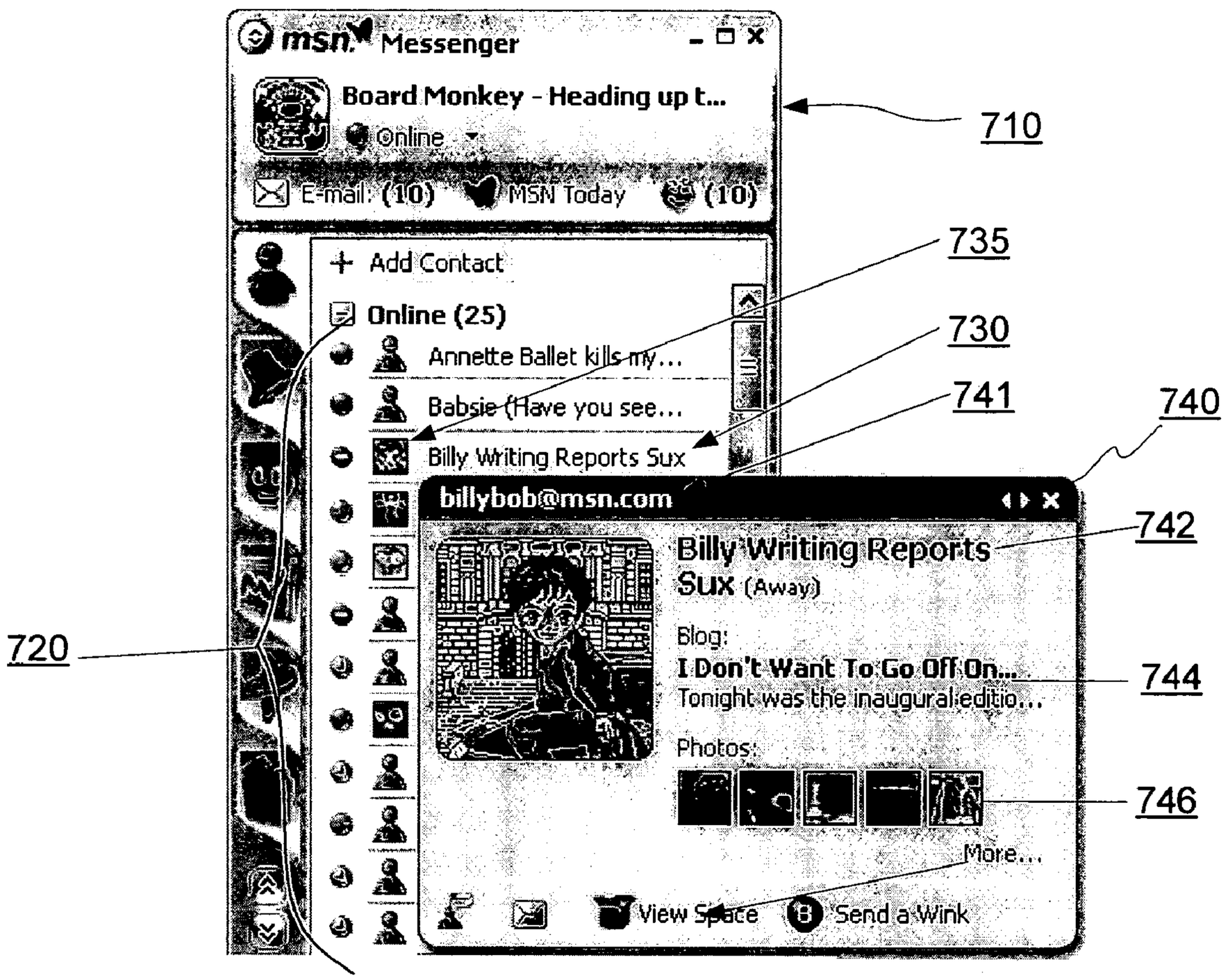
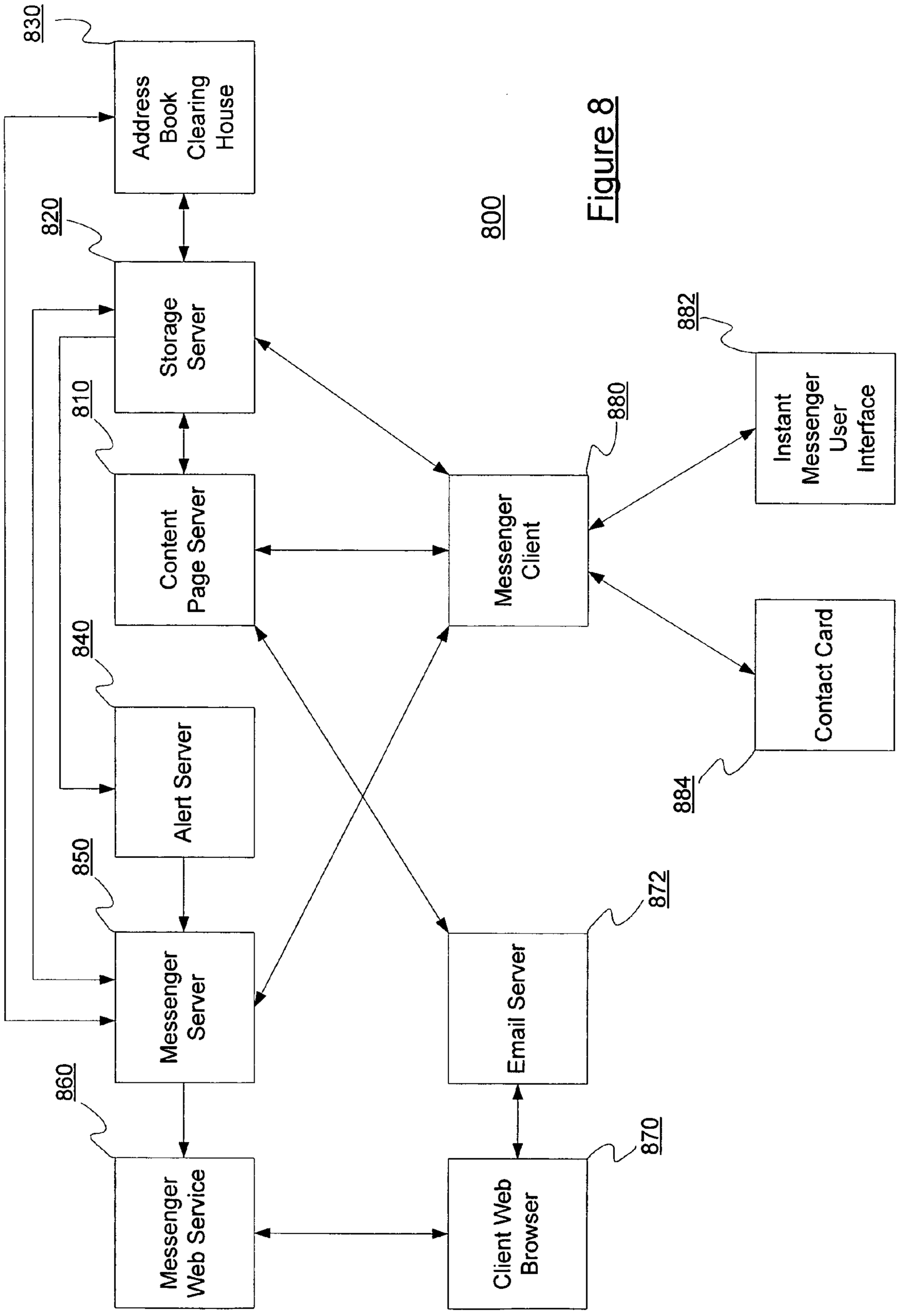

700
msn Messenger
Board Monkey - Heading up t...
Online
E-mail: (10)
MSN Today
(10)
710
Add Contact
Online (25)
Annette Ballet kills my...
Babsie (Have you see...
Billy Writing Reports Sux
735
730
741
740
720
billybob@msn.com
Billy Writing Reports Sux (Away)
742
Blog:
I Don't Want To Go Off On...
Tonight was the inaugural editio...
744
Photos:
746
More...
View Space
Send a Wink

Figure 7

Figure 8


800
830
Address Book Clearing House
820
Storage Server
810
Content Page Server
840
Alert Server
850
Messenger Server
860
Messenger Web Service
880
Messenger Client
882
Instant Messenger User Interface
884
Contact Card
872
Email Server
870
Client Web Browser

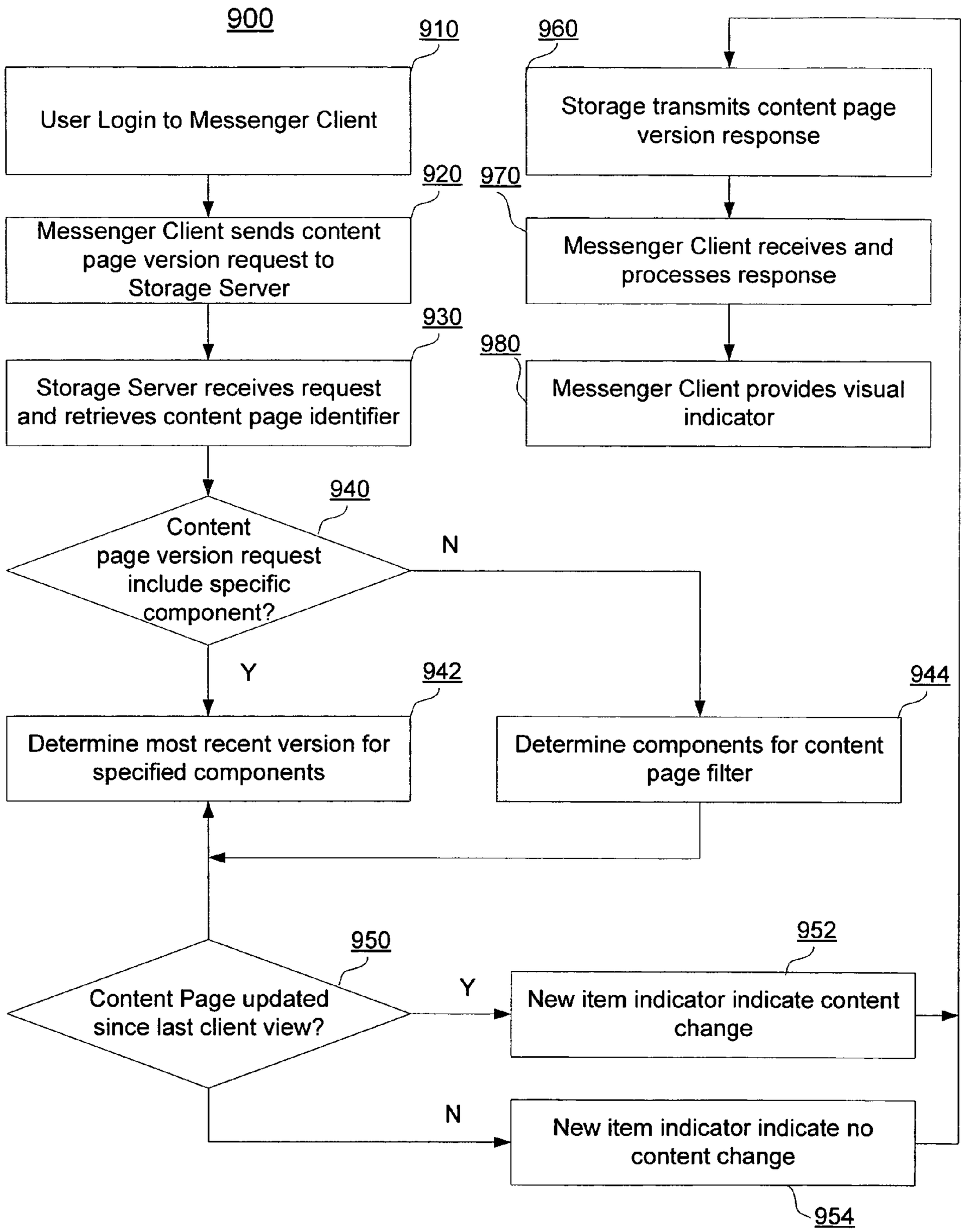

900
910
User Login to Messenger Client
920
Messenger Client sends content page version request to Storage Server
930
Storage Server receives request and retrieves content page identifier
940
Content page version request include specific component?
N
Y
942
Determine most recent version for specified components
944
Determine components for content page filter
950
Content Page updated since last client view?
Y
952
New item indicator indicate content change
N
New item indicator indicate no content change
954
960
Storage transmits content page version response
970
Messenger Client receives and processes response
980
Messenger Client provides visual indicator

Figure 9

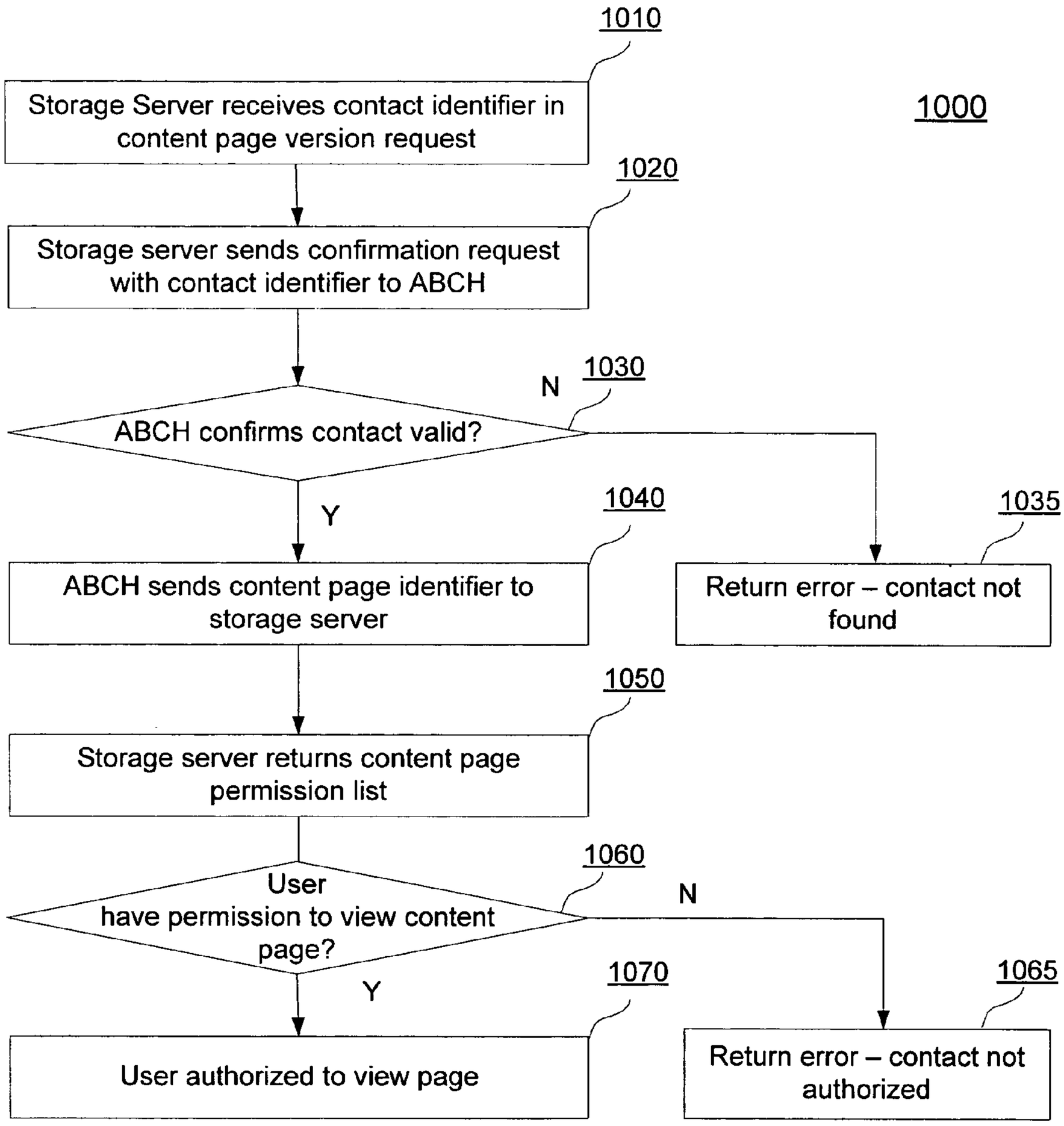

1000
1010
Storage Server receives contact identifier in content page version request
1020
Storage server sends confirmation request with contact identifier to ABCH
1030
ABCH confirms contact valid?
N
Y
1035
Return error – contact not found
1040
ABCH sends content page identifier to storage server
1050
Storage server returns content page permission list
1060
User have permission to view content page?
N
Y
1065
Return error – contact not authorized
1070
User authorized to view page

Figure 10

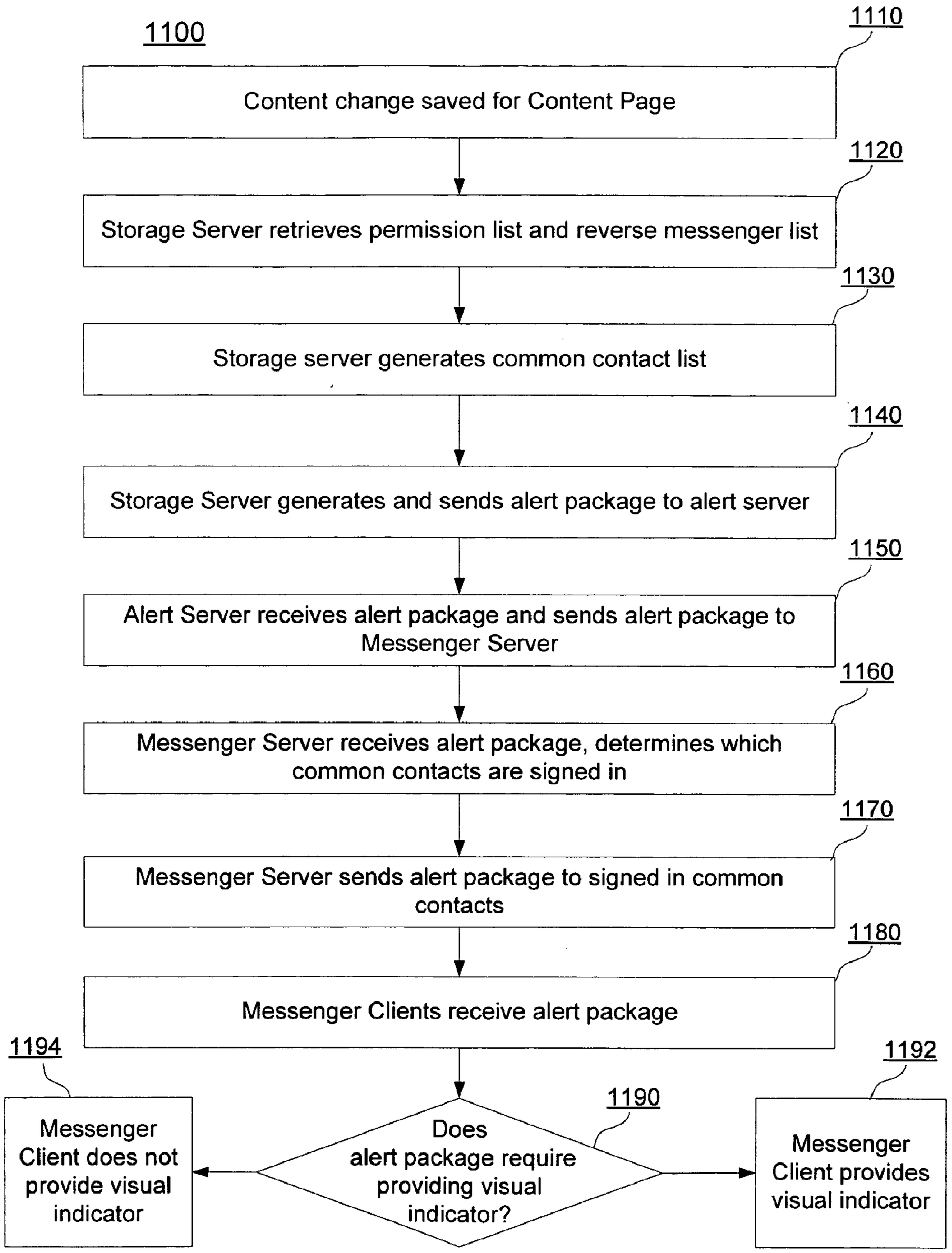

1100
1110
Content change saved for Content Page
1120
Storage Server retrieves permission list and reverse messenger list
1130
Storage server generates common contact list
1140
Storage Server generates and sends alert package to alert server
1150
Alert Server receives alert package and sends alert package to Messenger Server
1160
Messenger Server receives alert package, determines which common contacts are signed in
1170
Messenger Server sends alert package to signed in common contacts
1180
Messenger Clients receive alert package
1190
Does alert package require providing visual indicator?
1194
Messenger Client does not provide visual indicator
1192
Messenger Client provides visual indicator

Figure 11

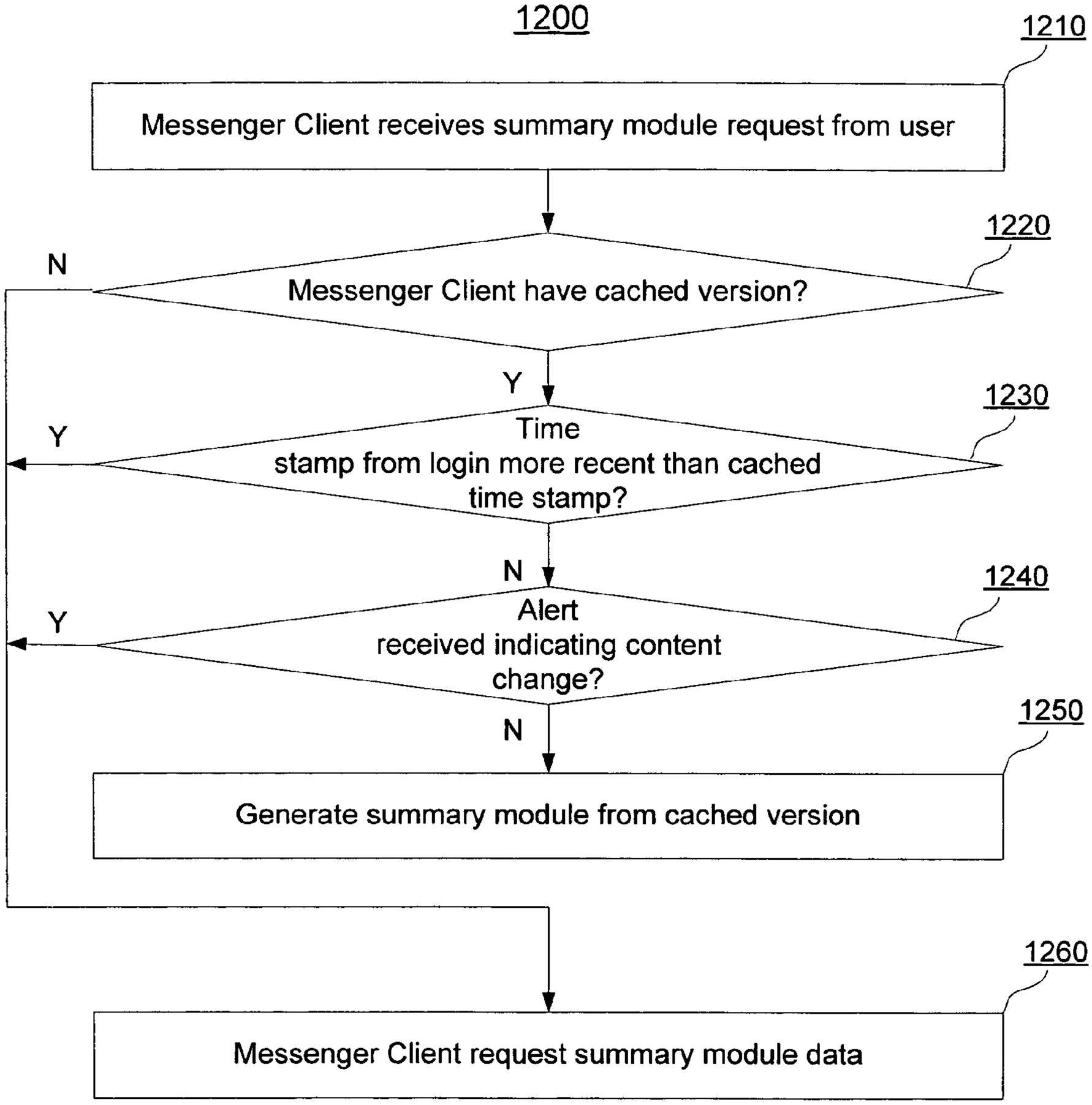

1200
1210
Messenger Client receives summary module request from user
1220
N
Messenger Client have cached version?
Y
1230
Y
Time stamp from login more recent than cached time stamp?
N
1240
Y
Alert received indicating content change?
N
1250
Generate summary module from cached version
1260
Messenger Client request summary module data

Figure 12

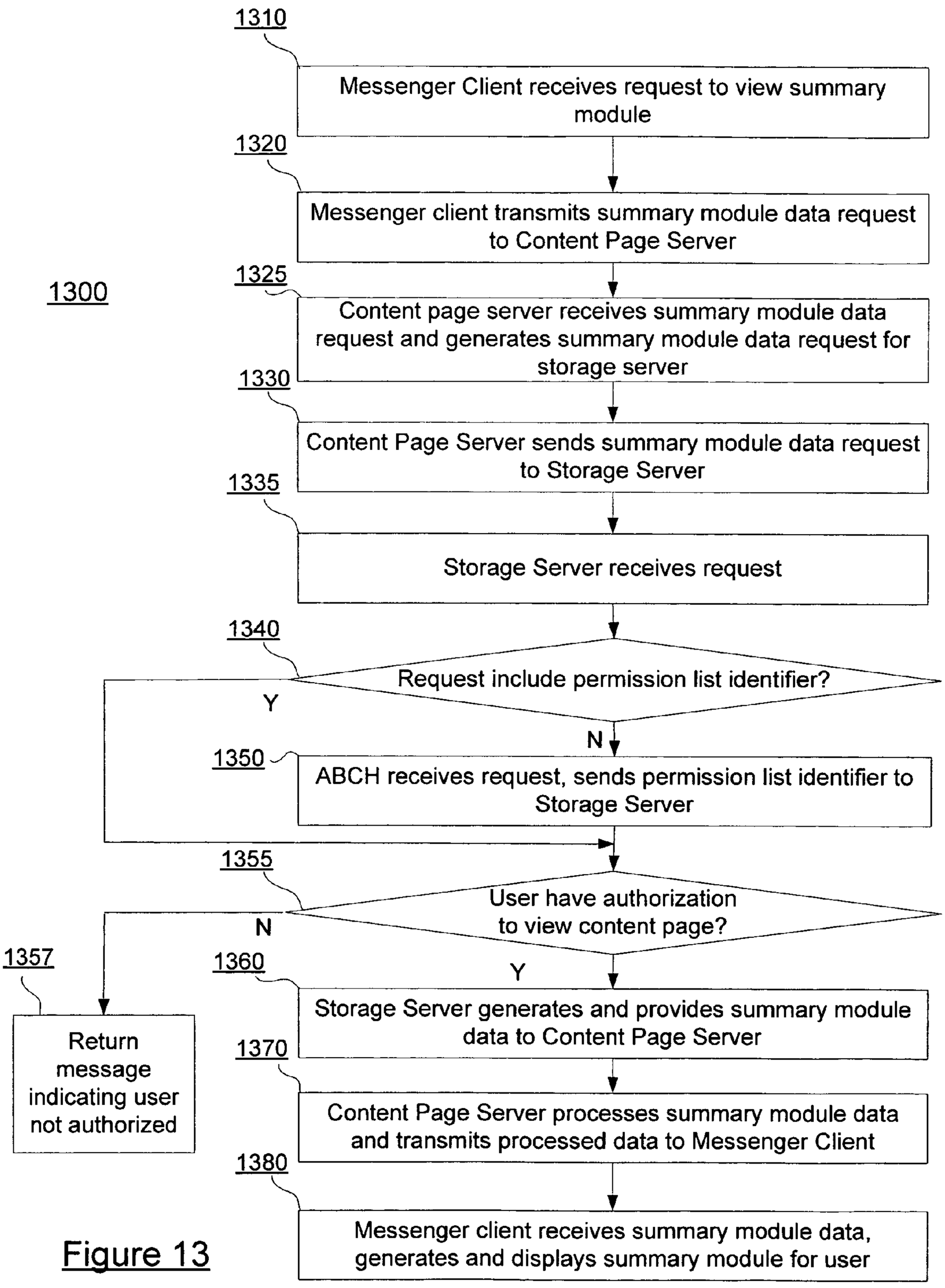

1300
1310
Messenger Client receives request to view summary module
1320
Messenger client transmits summary module data request to Content Page Server
1325
Content page server receives summary module data request and generates summary module data request for storage server
1330
Content Page Server sends summary module data request to Storage Server
1335
Storage Server receives request
1340
Request include permission list identifier?
Y
N
1350
ABCH receives request, sends permission list identifier to Storage Server
1355
User have authorization to view content page?
N
Y
1357
Return message indicating user not authorized
1360
Storage Server generates and provides summary module data to Content Page Server
1370
Content Page Server processes summary module data and transmits processed data to Messenger Client
1380
Messenger client receives summary module data, generates and displays summary module for user

Figure 13

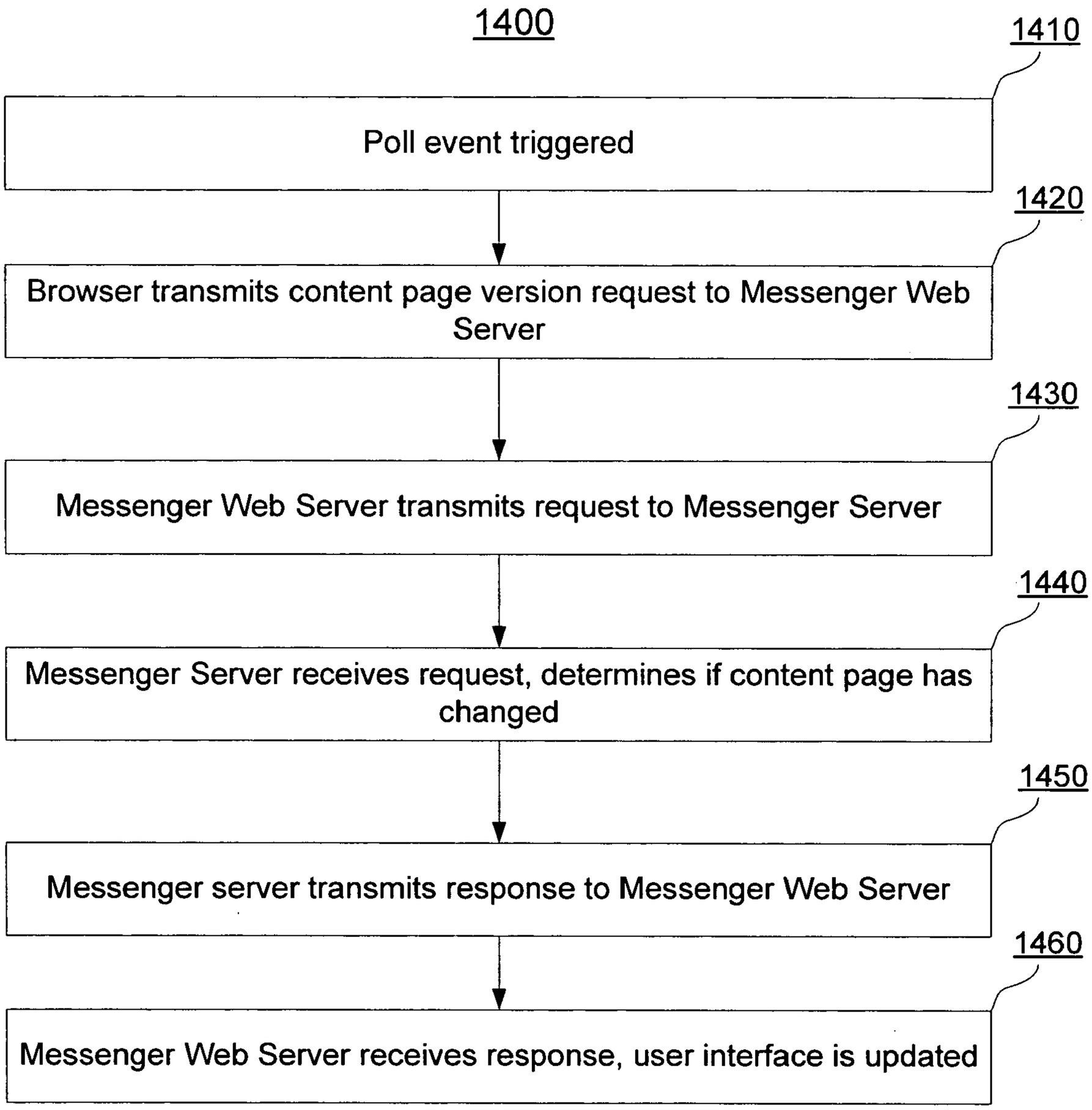

1400
1410
Poll event triggered
1420
Browser transmits content page version request to Messenger Web Server
1430
Messenger Web Server transmits request to Messenger Server
1440
Messenger Server receives request, determines if content page has changed
1450
Messenger server transmits response to Messenger Web Server
1460
Messenger Web Server receives response, user interface is updated

Figure 14

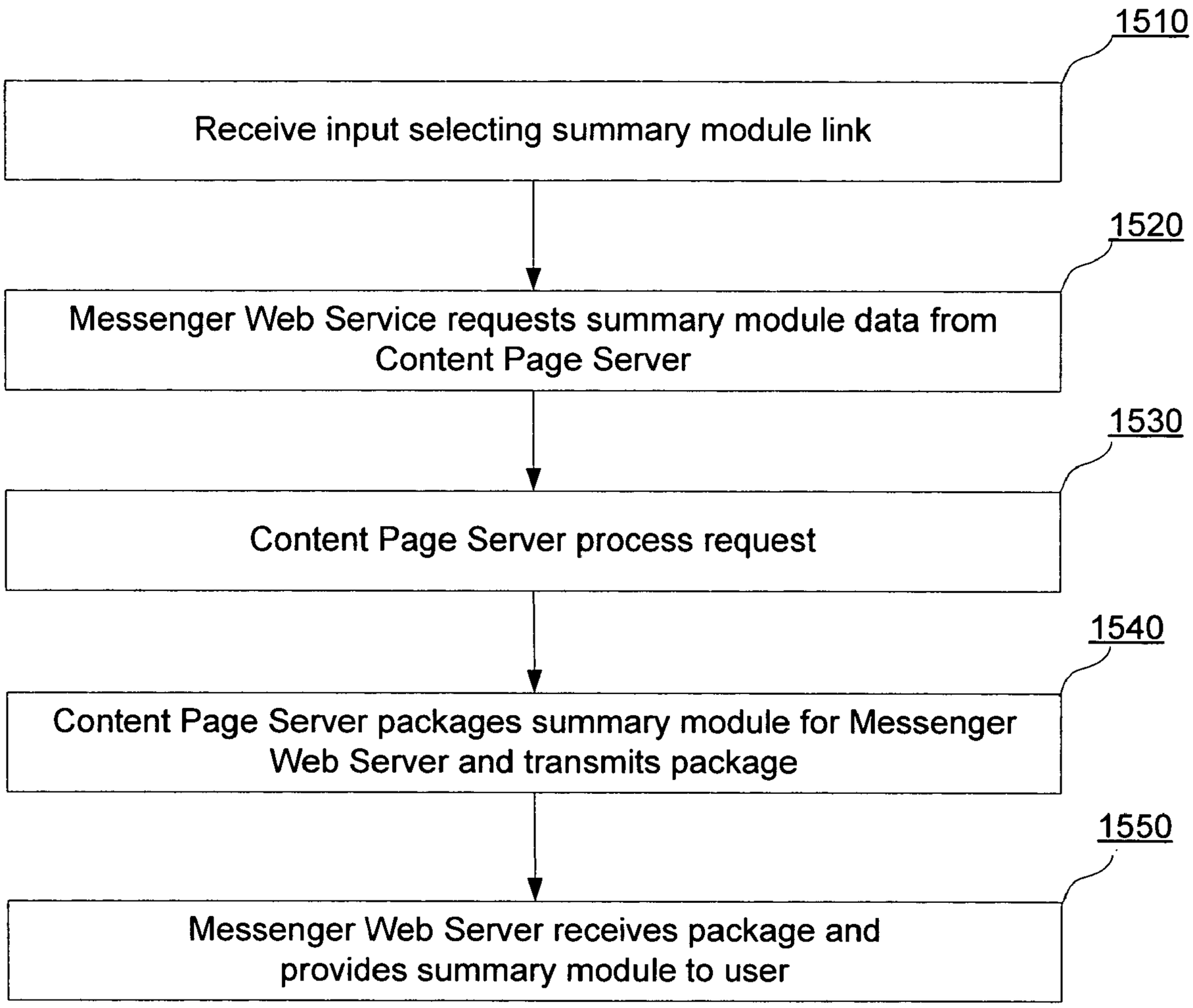

1500
1510
Receive input selecting summary module link
1520
Messenger Web Service requests summary module data from Content Page Server
1530
Content Page Server process request
1540
Content Page Server packages summary module for Messenger Web Server and transmits package
1550
Messenger Web Server receives package and provides summary module to user

Figure 15

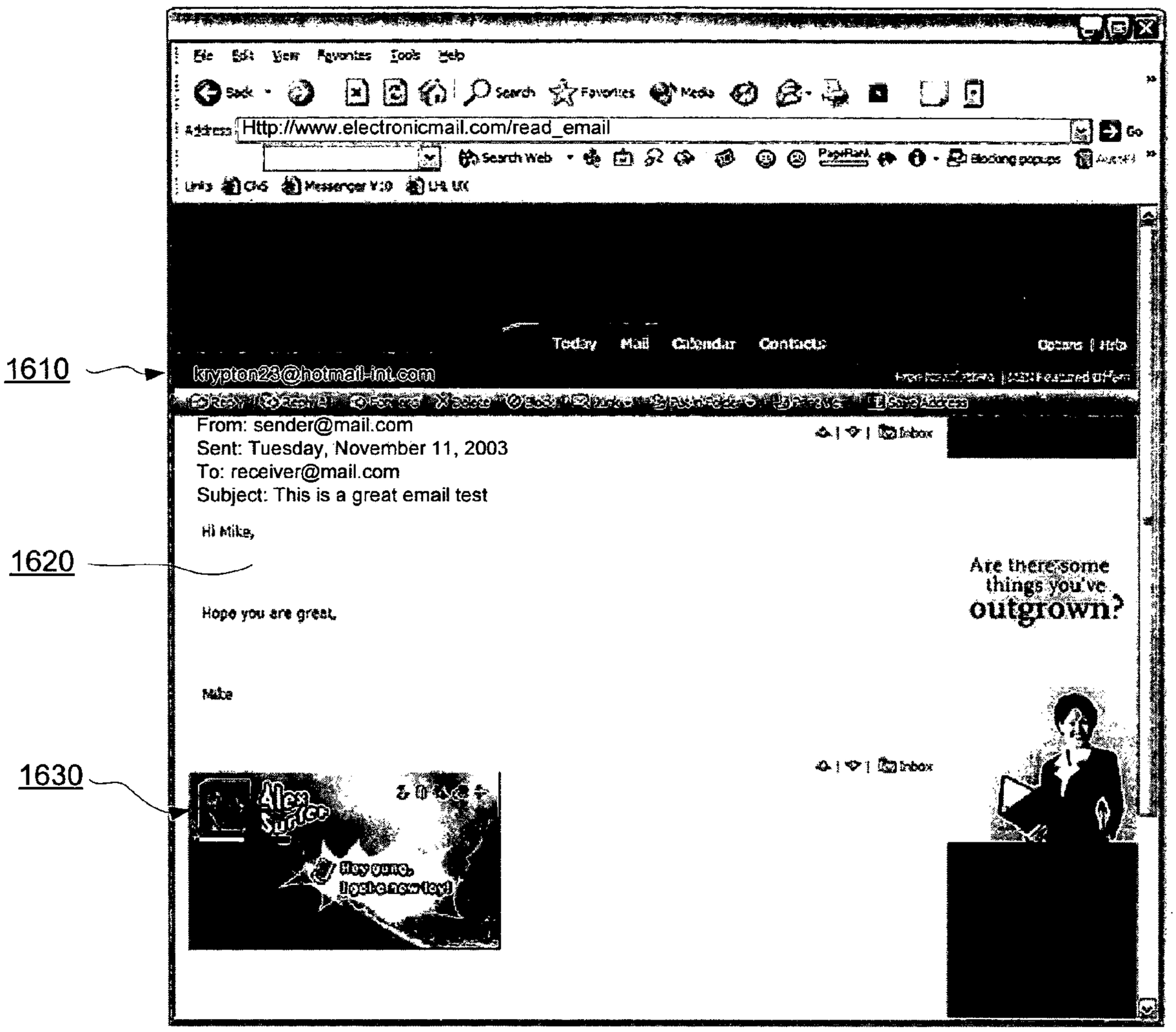

Http://www.electronicmail.com/read_email
Today
Mail
Calendar
Contacts
krypton23@hotmail-int.com
From: sender@mail.com
Sent: Tuesday, November 11, 2003
To: receiver@mail.com
Subject: This is a great email test
Hi Mike,
Hope you are great,
Mike
Are there some things you've outgrown?
1610
1620
1630

Figure 16

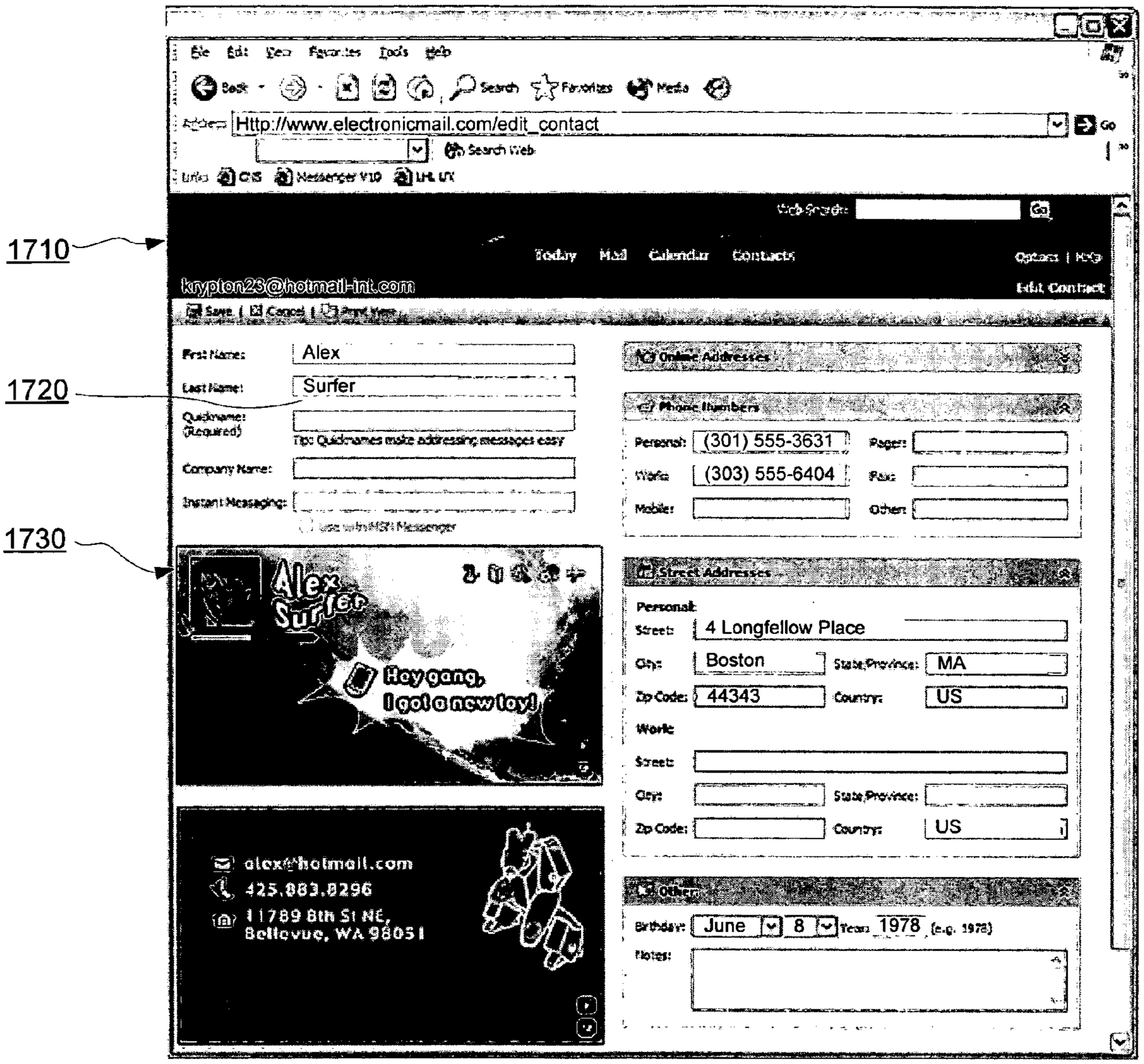

1710
1720
1730
Http://www.electronicmail.com/edit_contact
krypton23@hotmail-int.com
Today
Mail
Calendar
Contacts
Edit Contact
First Name:
Alex
Last Name:
Surfer
Quickname: (Required)
Company Name:
Instant Messaging:
Online Addresses
Phone Numbers
Personal:
(301) 555-3631
Pager:
Work:
(303) 555-6404
Fax:
Mobile:
Other:
Street Addresses
Personal:
Street:
4 Longfellow Place
City:
Boston
State/Province:
MA
Zip Code:
44343
Country:
US
Work:
Street:
City:
State/Province:
Zip Code:
Country:
US
Alex Surfer
Hey gang, I got a new toy!
alex@hotmail.com
425.883.8296
11789 8th St NE, Bellevue, WA 98051
Birthday:
June
8
Year:
1978
(e.g. 1972)
Notes:

Figure 17

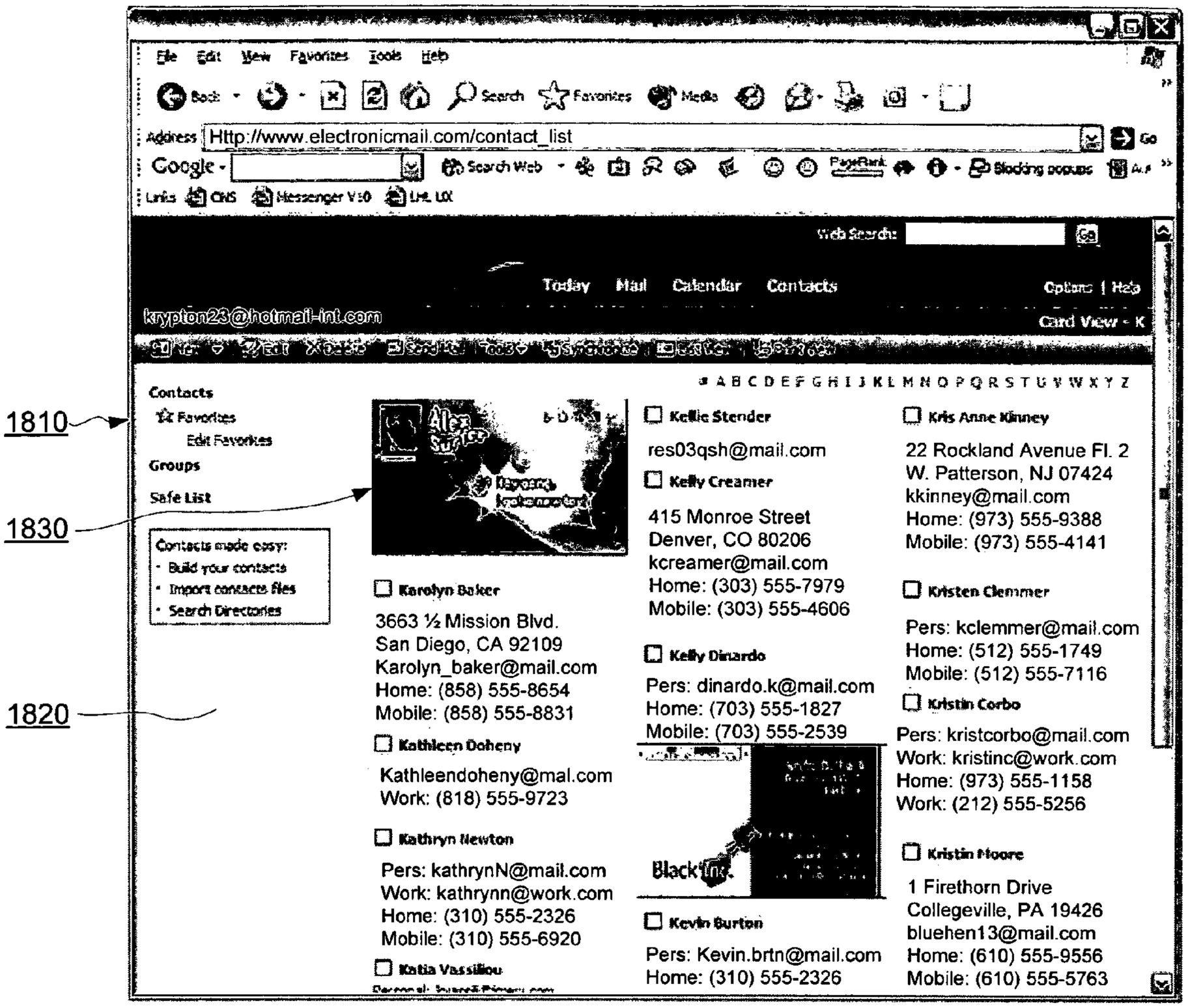

File Edit View Favorites Tools Help
Back Search Favorites Media
Address Http://www.electronicmail.com/contact_list
Go
Google
Search Web
Links
Web Search:
Today Mail Calendar Contacts
Options | Help
krypton23@hotmail-int.com
Card View - K
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Contacts
Favorites
Edit Favorites
Groups
Safe List
Contacts made easy:
• Build your contacts
• Import contacts files
• Search Directories
1810
1830
1820
Karolyn Baker
3663 ½ Mission Blvd.
San Diego, CA 92109
Karolyn_baker@mail.com
Home: (858) 555-8654
Mobile: (858) 555-8831
Kathleen Doheny
Kathleendoheny@mal.com
Work: (818) 555-9723
Kathryn Newton
Pers: kathrynN@mail.com
Work: kathrynn@work.com
Home: (310) 555-2326
Mobile: (310) 555-6920
Katia Vassiliou
Kellie Stender
res03qsh@mail.com
Kelly Creamer
415 Monroe Street
Denver, CO 80206
kcreamer@mail.com
Home: (303) 555-7979
Mobile: (303) 555-4606
Kelly Dinardo
Pers: dinardo.k@mail.com
Home: (703) 555-1827
Mobile: (703) 555-2539
Kevin Burton
Pers: Kevin.brtn@mail.com
Home: (310) 555-2326
Kris Anne Kinney
22 Rockland Avenue Fl. 2
W. Patterson, NJ 07424
kkinney@mail.com
Home: (973) 555-9388
Mobile: (973) 555-4141
Kristen Clemmer
Pers: kclemmer@mail.com
Home: (512) 555-1749
Mobile: (512) 555-7116
Kristin Corbo
Pers: kristcorbo@mail.com
Work: kristinc@work.com
Home: (973) 555-1158
Work: (212) 555-5256
Kristin Moore
1 Firethorn Drive
Collegeville, PA 19426
bluehen13@mail.com
Home: (610) 555-9556
Mobile: (610) 555-5763

Figure 18

DYNAMIC CONTENT CHANGE NOTIFICATION

CROSS REFERENCE TO RELATED INVENTION

The instant non-provisional application is related to the following patent application, which is hereby incorporated by reference in their entirety:

U.S. patent application Ser. No. 10/978,993, filed the same day as the present application, entitled "Dynamic Summary Module", having inventors Michael I. Tones, Steve P. Rosato, Jason C. Fluegel, Thomas A. Jeyaseelan, DeEtte M. Day, Eyal Z. Axelrod, German A. Gil.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention is directed to dynamically providing notifications and related content over a network.

2. Description of the Related Art

With the development of the Internet, several tools have evolved that allow people to communicate with each other. These tools allow people to express their thoughts, organize data, share experiences, and provide content to others with access to the web.

The tools for communicating over the web include digital contact cards and web pages. A digital contact card, or contact card, is an image containing contact information for a person or entity. Contact cards typically contain the same contact information as paper business cards, including name, title, company, phone number, fax number email and address against a plain background. The cards are typically distributed through email messages that contain a link to the card. After receiving the email, opening the email, and clicking on the contact card link, the viewer may see the information on the card. If the contact information or other information changes for the card owner, the card owner must manually change the information. This provides very plain, common and conservative representation of the card owner.

Web pages are among the most popular communication tools for the web. Web pages are commonly used to post personal content to the Internet. A web page can include formatted text, weblogs, images, photographs and links to other web pages. An owner may personalize a web page by configuring the content, formatting, backgrounds, fonts, colors, and other design elements. A web browser running on a local machine requests a given web page from a web server over the Internet, loads the page to the local machine, and interprets a dynamic or static web page to provide the page to user. An owner may make changes to the pages by adding, removing or changing content. Viewers may see the changes made by the owner the next time they visit the page.

There is no convenient mechanism for automatically publishing changes to web site content or the changes themselves to a trusted list of contacts. To provide notification of changes in a web page, the owner of a web page must manually notify viewers (for example, with a group email or word of mouth). Further, content on a web page is typically published for all to view. This discourages a web site owner from posting content that may not be suitable for everyone to see. Though certain Internet pages are password protected, users without the password are prevented from viewing any of the content. Owners of password protected content are required to provide or assist viewers in obtaining a password.

Prior web services, such as blog, photo sharing and instant messaging (IM) web services, have attempted to provide some type of notification process. A typical blog is a single

page of entries from the blog owner. Entry content is usually text, but may include photographs and links to other content. The entries are usually a stream-of-consciousness or "thought of the day", in reverse chronological order. Viewers can post comments in response to a particular entry, which are usually viewed on a separate page. Blogs are similar to websites in that they are available for all to see, but they can be implemented with passwords. Some prior blog systems provide for an email notification to a distribution list when a new entry is posted, and there are also systems available that can be integrated into existing blog applications to enable this functionality. However, the recipients are typically added to the distribution list by request of the recipient to the hosting web server, not by owner invitation. Often times, a blog owner will have complete strangers on the notification list for his blog. This provides for distribution of new blog entries to viewers that have no trust relationship with the owner. Further, the information provided is typically a link in an email address. Thus, to retrieve the information, a user must log-on to the email address, access their inbox, open the mail message, and click on the link.

Photo sharing web services allow users to upload, share, and order prints of digital photos. Sharing the photos requires generating a list of recipients to share the photos with and requesting the web service send an email notification to the list. This can be a tedious process each time a new set of photos is uploaded. The uploaded photos are not available to anyone not on the recipient list.

IM applications allow logged-in users to send text messages and other content to each other instantaneously. Each user may maintain a list of contacts that he wishes to interact with. One can "chat" with any of the contacts in their list, often called a buddy list, as long as that contact is signed into a network. Some IM applications are integrated with a web-based email service. When a user has an account with the integrated email service and is logged on to the IM, a notification can be provided through the IM when a new email is received at an email server.

Prior Internet communication tools do not provide for automatic notification of content changes to a trusted group of contacts or sufficiently provide for controlled access to content in a convenient manner.

SUMMARY OF THE INVENTION

The technology herein, roughly described, pertains to providing notifications and content summaries over a network. A content page owner configures the content page on a network. The owner may configure the content page content however he wishes. When changes are made to the content page, notifications are automatically generated and routed to a group of existing contacts that have a trust relationship with the owner. Only contacts with permission to view the content page, or the particular changed content, will receive the notification and be able to view the changes.

A visual indicator in a user interface notifies users that a content page or a subsection of the page (component) owned by one of his contacts has changed. When the visual indicator is selected by the user, a summary module can be provided. The summary module is a portal to network content. The network content may include content pages on the Internet and other content. The summary module content is configured by the owner of the content page. When used with a content page, the summary module can be generated directly from the content page.

A notification can be provided by detecting a content change in a content page, automatically generating a notifi-

cation associated with the content change, automatically transmitting the notification to a messenger server, and displaying a visual indicator associated with the notification on a messenger user interface, the visual indicator associated with the content change.

A dynamic summary module can be used to publish content selected by user. The summary module content can be located over a network, including a content page. When used with a content page, the summary module is automatically updated when the content page changes are detected.

A system for providing a notification over a network can include one or more servers, the one or more servers including content pages, one or more databases connected to one or more servers, the one or more databases including one or more user lists and one or more contact lists, and a messenger server connected to one or more servers and one or more databases, wherein the messenger server is configured to provide a notification to one or more contacts, the notification associated with content from the content pages.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** illustrates one embodiment of content page.

FIG. **2**A illustrates one embodiment of a front image of a summary module.

FIG. **2**B illustrates one embodiment of a back image of a summary module.

FIG. **2**C illustrates one embodiment of a front image of a summary module having a visual indicator.

FIG. **2**D illustrates one embodiment of a back image of a summary module having a visual indicator.

FIG. **3**A illustrates one embodiment of a summary module having blog content selected.

FIG. **3**B illustrates one embodiment of a summary module having photo content selected.

FIG. **3**C illustrates one embodiment of a summary module having music content selected.

FIG. **4** illustrates one embodiment of a method for configuring a summary module.

FIG. **5** illustrates one embodiment of a instant messaging user interface.

FIG. **6** illustrates one embodiment of a user interface for receiving input to provide a summary module.

FIG. **7** illustrates one embodiment of a user interface providing a summary module.

FIG. **8** illustrates one embodiment of a notification system.

FIG. **9** illustrates one embodiment of a method for providing a visual indicator at log-in to a service.

FIG. **10** illustrates one embodiment of a method for determining authorization to view a content page.

FIG. **11** illustrates one embodiment of a method for providing a visual indicator while logged in to a service.

FIG. **12** illustrates one embodiment a method for of determining a source to retrieve summary module data from.

FIG. **13** illustrates one embodiment of a method for retrieving summary module data.

FIG. **14** illustrates one embodiment of a method for providing a visual indicator in a network browser.

FIG. **15** illustrates one embodiment of a method for providing a summary module in a network browser.

FIG. **16** illustrates a summary module integrated into an email generation interface provided by a network browser.

FIG. **17** illustrates a summary module integrated into a contact management interface provided by a network browser.

FIG. **18** illustrates a summary module integrated into an contact list interface provided by a network browser.

DETAILED DESCRIPTION

A content page is an organized dynamic collection of content located on a network. The content page may include one or more components. In one embodiment, content page components may include content such as a blog, photo album, music list, network link list, contact information, calendar, profile information, polls, message boards, video, web cams, and guest books. Other content can be implemented on the content page as well. In one embodiment, a content page is a web site and accessible over the Internet. In this case, an owner of the content page can configure and access the content page regardless of the owner's location.

In one embodiment, a content page may include portions from other content pages. For example, a collection of blogs, images, songs and other content from other content pages may be added to the owner's content page. As a result, the owner can visit his own content page to see changes in the content of other content pages.

Content page content may be configured with different fonts, colors and styles to create a customized look and feel. Personalized content can also be used to configure a content page, including a personal message or quote, a personalized thumbnail, name and contact information, and contact links to instant messaging services or email. The personal message or quote can be any message of text, images, video or other content that the owner wishes to display on his page. The thumbnail can be a photo image of the person, an avatar, or some other image selected by the owner. The content page can be configured and changed at any time by an the owner of the content page.

FIG. **1** illustrates one embodiment of a content page **100**. Content page **100** includes blog component **120**, photo album component **130** below blog component **120**, links component **140** next to photo album component **130**, music component **150** above links component **140**, profile component **160** above the music component **150**, personal message **170** above components **120-170**, personal image **180** above profile component **160** and online indicator **190** next to the personal image **180**, all contained in user interface window **110**. Blog **120** includes an entry title **121**, an entry image **122** below the entry title **121**, a first blog entry **123** below the entry image **122**, and a blog toolbar **124** below the blog entry **123**. Below blog toolbar **124** is a second blog entry **125**. Second blog entry **125** is below first blog entry **123**, indicating it was posted earlier than the more recent blog entry **123**. Photo album component **130** includes image **131**, first photo album portion **132**, and second photo album portion **133**. First album portion **132** and second album portion **133** each represent a separate album and contain a representative thumbnail, an album title and an album description. Image **131** is the representative image from most recent album **132**. Links component **140** includes a list of links to other web sites selected by the owner of the content page. Music component **150** includes a list **151** of song titles and artists selected or recently played by the owner. A buy button is located next to each song in the list. The button is a link to a web service from which a viewer can purchase the particular song. Profile component **160** includes an email link **16**, IM link **162**, and text indicating the content page owner's interests, hobbies and quirks. The owner can add categories to the profile components. Personal image **180** is an image that the owner can choose from or

provide. Online indicator **190** indicates whether the owner is currently logged on to a network in communication with the content page.

Content page **100** is merely an example of one content page configuration. The spirit of a content page is that the content page owner can customize the appearance and experience of the content page to reflect their personal taste. Other configurations are possible, including those having different module titles, content, orientation, and look-and-feel features than that illustrated in FIG. **1**.

In one embodiment, the content of a content page and other pages located on a network can be shared using a summary module. A summary module is an interface used to publish information selected by an owner by providing a portal to the owner's content page. The information may include profile information, communication links, and other content located over a network, such as the content of a content page. The profile information may include name, address, phone number and other information for the owner. The communication links can include email, IM links, and other links to communicate with the owner. The summary Module content may include weather or news from the owner's location, recent news articles regarding the owner's business, scheduling information, whether the content page owner is signed in to network or server, or other information provided over a network. In one embodiment, the summary module includes a subset (or summary) of information from the owner's full content page.

One embodiment of a summary module is illustrated in FIGS. **2**A-**2**B. FIG. **2**A illustrates a front image **200** of a summary module and FIG. **2**B illustrates a back image **250** of the summary module. Front image **200** includes card **210**, user identifier **212**, card flip indicator **214**, card close icon **216**, nickname **220**, content title **222**, photo album title **230**, photo album description **232**, thumbnails **234**, additional content link **240**, email link **242**, IM link **244**, content page link **246**, and profile image **248**. User identifier **212** may be a name or email that uniquely identifies an owner over the network containing the owner's content page. When the card flip indicator **214** is selected, the front image of the card is removed and the back image **250** of FIG. **2**B is displayed to a user. Nickname **220** is a string of text. Content title **222** is the source of content displayed by the summary module. In the embodiment of FIG. **2**A, the content source is the content page of the owner, and each item in the summary module can be found in that content page.

The summary module content items **130**-**134** corresponds to photo module **120** of content page **100** illustrated in FIG. **1**. Photo album title **230**, photo album description **232** and thumbnails **234** are retrieved from the owner's content page. The additional content link **240** is a link to the URL of the owner's content page. Email link **242** prepares an email to the owner when selected. IM link **244** initiates an IM session with the owner. If the owner is not online when IM link **244** is selected, a viewer can send the owner an offline message. In some embodiments, when the owner is offline, a message is displayed indicating the owner is not available and no offline message is sent. Link **246** retrieves and opens the content page in a new window. Profile image **248** may be a tile, avatar, or any other image the owner may select to include in a profile.

Back image **250** of FIG. **2**B includes summary card **260**, summary card flip indicator **264**, summary card close icon **266**, and contact information **270**. Back image **250** illustrates the contact information for the owner in a more formal manner than that of front image **200**.

In one embodiment, a summary module can indicate that content from an associated content page is changed. A notification process dynamically and automatically incorporates the content page changes in the summary module. The notification process is discussed in more detail below. When a change occurs to a content page associated with a summary module, a visual indicator is provided on the summary module. The visual indicator may include a highlight, a marker, or some other indicator that may or may not correspond to the changed content. In some embodiments, there will be a visual indicator that corresponds to each new item. In other embodiments, the summary module will only have one potential visual indicator, regardless of what data is new.

FIGS. **2**C-**2**D illustrate an embodiment of a summary module with a visual indicator representing a change to a content page. FIG. **2**C illustrates one embodiment of a front view **280** of a summary module having one or more visual indicators. FIG. **2**C includes summary module **285**, thumbnail row **287** and more content indicator **288**. The thumbnails **234** of summary module **210** of FIG. **2**A included content of 1, 2, 3, 4 and 5. The numbers indicate the order the photos were added to a corresponding content page. The "1" thumbnail was added first, and the "5" thumbnail was added most recently. The thumbnails shift from left to right on the summary module as new ones are added. The thumbnails on card **285** include content of 2, 3, 4, 5 and 6. The new thumbnail "6" is added to the row of thumbnails. All existing thumbnails are shifted to the right, with thumbnail "1" being shifted off the card. The "6" thumbnail is also highlighted with a border indicating that it is new. Summary module **285** also includes icon **288** (an asterisk "*") next to the "more . . . " link. Icon **288** indicates that new content was added to the content page and is accessible by selecting the associated link. In one embodiment, selecting any item on the summary module will cause the user to be taken to the content page associated with the summary module. FIG. **2**D includes back image **290** of summary module **295**. Summary module **295** includes contact information **297**. A visual indicator **298** (an asterisk "*") next to the mobile phone entry indicates that this data item has changed since the last viewing of the summary module. These are examples of how a summary module can indicate that new content was added to a content page.

In one embodiment, the owner of a content page determines what content from the content page is provided on the corresponding summary module for the owner. Thus, although a change may be made to the content page, the summary module can be configured only to provide content from selected modules of the content page. Modules to be included in a summary module can be selected manually by the content page owner, by algorithm (most frequently viewed, etc.), or some other manner. Additionally, the summary module content and layout can be organized as desired by a user. For example, a summary module can be presented in different shapes with component information located in different areas within the shape.

FIGS. **3**A-**3**C illustrate embodiments of a summary module wherein the summary module is selected by a viewer. FIG. **3**A includes summary module **310**, blog content **320** within summary module **310**, cursor **315** over blog content **320**, and blog content window **325** overlapping summary module **310**. Blog content **320** includes a portion of a blog title that reads, "Mountain Biking at 3800 ft . . . ", and a portion of a blog entry that begins with, "Did you hear that Matt went over the bars as Woodline". When cursor **315** is placed over the blog entry of blog content **320**, the blog content window **325** is generated. The blog content window **325** includes the blog entry that begins with the blog title in the first line, the blog entry in

the next three lines, and an indication reading "12 comments" in the last line. Both the blog title and blog entry of blog content **320** and blog content window **325** correspond to a blog component of the content page associated with the summary module. If the viewer were to provide an input, such as a mouse click, while the cursor is over the blog entry and currently displaying the blog content window, the client will request the content page content, including the blog component, from the content page server and display it on the local machine.

FIG. **3**B includes summary module **330**, photo content **335** within summary module **330**, cursor **340** over photo content **335**, and photo content window **350** overlapping summary module **330**. Photo content **335** includes six thumbnail images. When cursor **340** is placed over a thumbnail of photo content **340**, the photo content window **350** is generated. The first line of the photo content window **350** includes the title of the photo album the image belongs to, which reads "Hawaii Vacation". The second line of the photo content window **350** includes a description of the image selected, reading "Me & Pat". Both the photo album title and image description of the photo content window **350** correspond to a photo album component in the content page associated with the summary module. If the viewer provides an input, such as a mouse click, while the cursor **340** is over a thumbnail and currently displaying the photo content window **350**, the client will request the content page content, including the photo component, from the content page server and display it on the local machine.

FIG. **3**C includes summary module **360**, list content **370** within summary module **360**, cursor **365** over list content **370**, and list content window **380** overlapping summary module **360**. List content **370** includes a first song item reading "Brandi Carlile: Turpentine" and a second song item below the first song item reading "Damian Rice: Cannonball". When cursor **365** is placed over a song item of list content **370**, the list content window **380** is generated. The first line of the list content window **380** includes the song title, reading "Cannonball", the second line includes the artist, reading "Artist: Damian Rice", and the third line includes the list title, reading "Playlist: Top 10 Favorites". The song item title, artist and play list of the list content window **380** correspond to a song list component in the content page associated with the summary module. If the viewer provides an input, such as a mouse click, while the cursor **365** is over a list item and currently displaying the list content window **380**, the client will request the content page content, including the song list component, from the content page server and display it on the local machine.

When associated with a content page, a summary module can be configured by an owner of the content page. One method for configuring a summary module is illustrated in method **400** of FIG. **4**. Access to the content page with authorization to change the page content is provided to the owner at step **410**. In one embodiment, the authorization is provided after the owner provides identification and password information. While accessing the content page, the user may select a component of the content page and indicate that the component should be included in the owner's summary module. At step **420**, the system receives input indicating a user has selected a content page component to add in the summary module. After the content page receives input selecting a component, the content page calls an update method in a storage server **820** (see FIG. **8**) at step **430**. The call includes a component identifier for the selected component and a content page identifier for the content page. Storage server **820** then creates a filter for the component at step **440** indicating how the component is to be included in summary module data requests. In one embodiment, the filter parameter includes a binary bit, wherein a value of one indicates the component is included in the summary module. The filter parameter may also include component item parameters that indicate how the component content should be included in the summary module. For example, a blog component filter may indicate that the blog entry title and the first 20 characters of the blog entry be included, a photo album filter may indicate that a photo album title and up to five thumbnails be included, and a play list component filter may indicate that the play list title and up to song titles and artists can be displayed. The filter parameters can be used by messenger client when sending summary module content requests and by storage server **820** to determine the components that take place in the notification process. The messenger client content query request and notification process are discussed in more detail below.

In one embodiment, permissions may be used to determine access to content pages and summary modules. An owner of a content page may specify one of more contacts on a permission list to receive updates of her content page. Those not on the permission list will not have access to view the content page, summary module and notifications associated with them. The contacts having permission can be entities that the user has a trusted relationship. In one embodiment, the contacts can be entities that the user already has a relationship with over a network. For example, the contacts may be a reference to or selected from the list of contacts maintained in an instant messaging service.

In one embodiment, a user can receive notifications for changes to content pages of the user's contacts through a stand-alone application client. A stand-alone client is a software program that resides in the local machine memory. One example of a stand-alone client is an instant messaging (IM) client. An IM client will be referred to in the following discussion for purposes of illustration.

One embodiment of an IM user interface **500** is illustrated in FIG. **5**. IM interface **500** includes window **510**, user status indicator **512** within window **510**, messenger contact list **514**, visual indicator **520**, and for each contact a contact indicator **530** and online indicator **532**. Each time a user logs on to an IM service, a messenger server provides the members of messenger contact list **514** to the messenger client and indicates which members are associated with a content page. A user will typically have one or more contacts listed in messenger contact list **514**. The user status indicator **512** indicates whether the user is currently logged into the messenger server. The online indicator **532** for each of the contacts on messenger contact list **514** indicates whether or not the contact is currently logged in to the messenger sever.

In one embodiment, visual indicator **530** serves to notify a user that a content page for a contact has changed. A visual indicator **530** can be implemented as a change in color surrounding the online indicator for a contact. When a contact from the messenger list **514** does not have a content page, no visual indication is shown as illustrated by online indicator **522** associated with the contact identifier "James". Some embodiments may provide visual indicators differently than that illustrated by FIG. **5**, such as a highlighted contact identifier, a visual icon, shadow, special character, etc. displayed near the contact name or online indicator.

From within a messenger client, a user may view a summary module by providing input to select a corresponding contact. Once selected, the messenger client retrieves and displays the summary module. FIGS. **6** and **7** illustrate a messenger client interface that can provide a summary module. FIG. **6** includes client interface window **610**, a user nick-

name **615**, messenger contact list **620**, contact nickname **630**, contact presence indicator **635**, message window pointer **640** and message window **650**. Client interface window **610** is an interface for allowing a user to receive alerts, engage contacts in message sessions and providing input to view content cards. The user associated with the user nickname **615** "Board Monkey" is signed into the messenger server through the messenger client interface. Messenger contact list **620** includes a number of contacts associated with the signed-in user. The contact presence indicator indicates whether a contact is currently signed in and has a content page. If a contact is currently signed in and the contact has a content page, the contact presence indicator can include an image from the content page. In the embodiment illustrated in FIG. **8**, the image is an avatar. In one embodiment, a cursor can be placed over, or "hover" over, the contact presence indicator **635** associated with contact nickname **630**, "Billy Writing Reports". As a result of hovering the cursor over the contact presence indicator, a message window **650** is displayed. A message window can include a summary module and/or can provide the user information regarding further steps the user can take to view content. Message window **650** provides text that reads "Click here to open". The message window pointer **640** points to the contact presence identifier **635** associated with the message window **650**.

FIG. **7** illustrates a messenger user interface in which a summary module has been provided. In one embodiment, the summary module **740** is displayed as a result of the interface **710** of FIG. **7** receiving input selecting the contact presence indicator **735**. FIG. **7** includes interface window **710**, messenger contact list **720**, contact nickname **730**, contact presence indicator **735**, summary module **740**, contact identifier **741**, summary module contact nickname **742**, and summary module content **744** and **746**. Summary module **740** corresponds to contact associated with contact nickname **730**, "Billy Writing Reports". The contact nickname **742** in the summary module **740** is identical to the contact nickname **730** in the messenger user interface **710**. In some embodiments, the summary module may be displayed by receiving as input, such as a right mouse button click, the selection of a contact presence indicator, a contact identifier, or some other visual indicator associated with a content page for a contact.

A content page, summary module, automatic notification process and the dynamic synchronization between them may be implemented by a system such as that illustrated in FIG. **8**. System **800** of FIG. **8** includes content page server **810**, storage server **820**, address book clearing house (ABCH) **830**, alerts server **840**, messenger server **850**, messenger web service **860**, client web browser **870**, email server **872**, messenger client **880**, instant messenger user interface **882**, and summary module **884**. Each of the servers and the client device of FIG. **8** can be implemented as computers known in the art. For example, they may include one or more processors in communication with one or more storage devices (memory, disk drives, etc) and one or more peripherals (monitor, keyboard, mouse, printer). The one or more storage devices store data and code for implementing the processes described herein.

Content page server **810** sends data to and receives data from storage server **820**, messenger client **880**, and email server **872**, and may optionally send information to alert server **840** (not shown). ABCH **830** receives and transmits information with storage server **820** and messenger server **850**. Messenger server **850** receives information from alert server **840** and receives and transmits information messenger client **880**, storage server **820** and messenger web service **860**. Messenger client **880** receives and transmits information with storage server **820**, content page server **810**, messenger client **880 884** and contact card interface **882**. Client web browser **870** receives and transmits information with messenger web server **860** and email server **872**. The communication between the devices of FIG. **8** are further explained below.

Content page server **810** can be implemented as one or more web servers that configure content page information for requesting entities. The requesting entities may include messenger client **880** for IM applications, client web browser **870** for web pages and browser based email, and email server **872** for email applications. For example, content page server **810** provides content page content to messenger client **880**, and email server **872** in an appropriate language such as English or French, depending on the locale of the user. Content information regarding a content page can be transmitted by an XML feed to messenger client **880** or packaged as HTML for email server **872** and client web browser **870**. Content page server **810** also formats data received from storage server **820** before populating a requested summary module. Formatting can include removing header information from a blog, generating a proper sized thumbnail image for display into a summary module, and other formatting tasks.

Storage server **820** includes one or more databases where content page information is persisted. Storage server **820** can also contain summary module data, version and last-date-modified information for content pages, and content page components and component items, and permission information. In some embodiments, the permission information is maintained in a cache dynamically built by the storage server and returned to messenger clients. Messenger clients can then persist the cache. The cached permission information can include a cached permission list which is an opaque data structure used by storage server **820** to cache the user access credentials for a particular content page.

ABCH **830** stores user information. User information may include contact information such as telephone, email and address, a user contact lists (e.g., address book, messenger contact lists or buddy lists, and other lists), services utilized, group memberships, content page information and permission and roles information. Content page information may include whether or not the user has a content page, and other information. Permission and roles information can include permission list identifiers. Permission list identifiers enable storage server **820** to retrieve a user authorization cache, or cached permission list, from storage server **820** databases. Permission and roles information can also include the permissions the user has on the content pages owned by the contacts on his messenger contact list. For example, a user may have three contacts that have content pages. A first contact A may authorize the user to view A's entire content page, the second contact B may authorize the user to view selected modules of B's content page, and the third contact may not authorize the user view any of C's content page. The authorizations provided by A, B and C can be included in the permission list associated with A in ABCH **830**.

A permission list identifier may be retrieved from ABCH **830** and cached on clients such as the client messenger. In one embodiment, the cached versions of the permission list identifier are only valid for a limited period of time, after which new permission list identifiers must be obtained. In one embodiment, a permission list identifier is valid for **24** hours.

Alert server **840** is used to deliver notifications to messenger server **850**. The notifications can include information regarding stock quotes, email delivery, auction events, breaking news, new contacts, content page changes and other information from content providers. The alerts may be retrieved with IM client, and IM web services.

Messenger server **850** brokers connections between messenger client **880**s and handles initial session connections, presence information and delivery of notifications. Messenger server **850** is discussed in more detail below. Messenger web service **860** facilitates an IM service provided over the Internet through a client web browser **870**. Email server **872** provides an email service that can be accessed over the Internet through a client web browser **870**. Messenger client **880** is a local program that provides an IM user interface and correlates received data to corresponding contacts.

As a content page is updated or changed by its owner, a notification of the change can be provided to contacts on the owners contact list. In one embodiment, changes are provided to contacts in the owner's messenger contact list. FIG. **9** illustrates a method **900** for adding a visual indicator to a messenger contact list at the time of user log on. Method **900** begins with step **910** where a user logs on to messenger client **880**.

The log on process can include messenger client **880** prompting the user for log on information, such as a user name and password, and forwarding the logon information to messenger server **850**. In one embodiment, upon receiving the logon information, messenger server **850** sends an identification confirmation query to ABCH **630** that includes the logon information received from the user. In some embodiments, messenger client **880** will send an identification confirmation query directly to ABCH **630**. In this case, any response from the ABCH **630** can be sent directly to messenger client **880**. ABCH **630** receives the logon confirmation query the and confirms the logon.

In some embodiments, ABCH **630** will confirm that the user name exists and that that password provided by the user matches a password stored in ABCH **630**. In another embodiment, the messenger client or the messenger server may send the login information to a credential server (not illustrated in FIG. **8**) and receive credential information in return. The credential information can then be provided to ABCH **630**. ABCH **630** then confirms the credential information and operation continues.

Upon confirming the logon information, ABCH **630** will send an identification confirmation reply to messenger server **850**. In some embodiments, the reply will include the username, a messaging contact list associated with the user, an indication whether each contact is associated with a content page, and an indication that the user associated with the username has a content page. In one embodiment, the indication can be in the form of a flag indicating the user has a content page, for example, a HasPage flag. Messenger server **850** receives the confirmation response from ABCH **630**. Messenger server **850** then determines the presence information for the contacts on the user's messaging contact list. In some embodiments, messenger server **850** determines presence by determining whether each contact on the messaging contact list is currently signed in to messenger server **850**. A contact that is signed in to messenger server **850** has a presence status of online. If the contact is not signed into messenger server **850**, the contact has a presence status of offline. After determining the presence for each contact, messenger server **850** sends messenger client **880** a reply that includes the messenger contact list for the user, presence information for each contact, an indication whether each contact has a content page.

After logon, messenger client **880** transmits a content page version request to storage server **820** at step **920**. In one embodiment, the content page version request may include filter information regarding what modules are relevant to the version request and, for each of the content pages associated with the messenger contact list, a content page identifier and the most recent version information known to messenger client **880**. Filter information indicates the content page components that are included in the summary module associated with a content page. The content page identifier in a content page version request uniquely identifies the content page.

Upon receipt of the content page version request, storage server **820** retrieves the content page identifier associated with the summary modules requested at step **930**. If messenger client **880** is requesting version information for the first time for a particular content page and doesn't know the content page identifier, storage server **820** needs to determine the content page identifier. A method for determining the content page identifier by storage server **820** is illustrated in FIG. **10**. At step **1010**, storage server **820** receives the contact identifier in the content page version request. After receiving the content page version request with the contact identifier, storage server **820** will send a confirmation request to ABCH **630** to confirm the contact identifier is valid at step **1020**. In some embodiments, storage server **820** determines an alternative contact identifier from the contact identifier received in step **1010**. The alternative contact identifier is then sent to ABCH **630** at step **1020**.

In one embodiment, the content page version request allows the messenger client to specify a filter that determines the subset of content page components that version information is to be returned for. The filter allows the caller to specify attribute/value pairs, specific content types or combinations of the these. The storage server can collect version information for the content page components that match that criteria specified. The version information returned by the storage server can be applied to future queries that specify the same filter value.

At step **1030**, to confirm the contact identifier is valid, ABCH **630** will look for the contact identifier in a list of contacts. If the contact identifier is found in the list of contacts, the contact identifier is determined to be valid and operation continues to step **1040**. If the contact identifier is not found, ABCH **630** returns an error message to storage server **820** at step **1035**.

ABCH **830** sends the content page identifier to storage server **820** at step **1040**. Storage server **820** will then determine if the requesting user has permission to view the content page. To make the determination, storage server **820** first retrieves a permission list associated with the content page at step **1050**. The permission list is a list of users authorized to view the content page and includes a permission list identifier and a list of contact identifiers authorized to view the content page. Storage server **820** then determines if the user has permission to view the content page at step **1060**. If the user identifier is on the permission list, the user is authorized to view the content page and operation continues to step **1070**. Otherwise, storage server **820** returns an error to messenger client **880** indicating the user is not authorized to view the summary module at step **1065**.

In one embodiment, steps **1030** through **1060** are performed by ABCH **630** rather than ABCH **630** and storage server **820**. In this case, ABCH **630** receives a request from storage to determine if the viewer has permission to view the content page. ABCH **630** then accesses a permission list associated with the content page owner. If ABCH **630** determines the viewer is authorized by the permission list to view the content page at step **1060**, operation continues to step **1070**. If not, operation continues to step **1065**.

In one embodiment, a content page owner may provide different permissions for different contacts. For example, a content page owner may allow some contacts to view all

components of a content page, allow other contacts to view selected components of a content page (for example, only name and email information or a blog component), and not allow some contacts to view any contact page content. As a result, different contacts can receive a summary module having different content from the same content page (the content that the contact has permission to view).

Returning to method **900**, storage server **820** determines if the content page version request specifies a set of content page components at step **940**. A content page version request specifying content page components includes the most recent version of the content page and its components known to messenger client **880**. The component information may not be specified in a content page version request when messenger client **880** has not previously requested information for the summary module. In one embodiment, the most recent version information provided by the client is a time stamp indicating the date that messenger client **880** received summary module content for the particular component. The actual most recent version information for a content page and each of its components is stored in storage server **820**. The most recent version information for the content page is the date of the most recent change to any of the content page components.

The content page version request allow the messenger client to specify a filter that determines the subset of content page components that version information is to be returned for. The filter allows the caller to specify attribute/value pairs, specific content types or combinations of the these. The storage server will collect version information for only content page components that match that criteria specified. The version information returned by the storage server will only be valid for future queries that specify the same filter value.

If the request specifies the components, operation continues to step **942** wherein storage server **820** accesses the version information for the specified components. When the components are not specified in a content page version request, operation continues to step **944** wherein storage server **820** determines the most recent version and/or what components should be included by accessing the filter information for each component in each content page. In one embodiment, the filter information is implemented as an annotation associated with each content page component. For example, a ComponentFilter annotation can have a value of one if the component is to be included in a summary module and a value of zero if it should not be included in a summary module. If the filter information for a component is included in the request, storage server **820** accesses and stores the component time stamp for those components at step **942**.

In one embodiment, storage server **820** determines whether components in a content page have been updated since the last time a summary module was viewed by the user at step **950**. To make this determination, storage server **820** compares the most recent version information for each component in the content page version request to the actual most recent version information associated with the content page. In one embodiment, the storage access the child items of each component, such as blog entries in a blog and images in a photo album, and compares the timestamp of the child item to that received in from messenger client **880**. If one or more of the storage components have been updated since most recent version information received from messenger server **850**, a new item indicator may be set to reflect that the content page has new content at step **952**. In one embodiment, the new item indicator may be implemented as a flag, for example a HasNewItem flag. If the content page has not changed since the last view by the user, the new item indicator indicates is set to false at step **954**.

Storage server **820** sends a content page version response to messenger client **880** at step **960**. The content page version response can include the content page identifier, last modified information for the content page, the new item indicator, the permission list identifier and, for each component, a component summary. The component summary may include, for each component, a component identifier and the time stamp for the component. In some embodiments, the content page version request can return information for up to three hundred content pages, allowing the messenger client to request content pages for up to three hundred messenger contacts.

Messenger client **880** receives and processes the response at step **970**. Messenger client **880** processing can include storing the response information locally, compares the component version information from the response to any component version information it contained in local memory. For each contact for which a more recent component version was received, a visual indicator is provided in the messenger user interface at step **980**. Each visual indicator is associated with a contact indicator in the user interface. In some embodiments, storage server **820** will return a set of component identifiers indicating which components are included in the summary module. In this case, messenger client **880** will also determine whether new set of component identifiers was received in the content page version response, indicating that permissions have changed for the user. If the set of component identifiers has changed, messenger client **880** will store the new set and request the new set next time it requests information for that content page.

In one embodiment, when a content page owner logs into the instant messaging (IM) system (such as that provided by messenger server **850**), the IM system will inform IM system users who have the content page owner on their messenger contact list that the content page owner is online and is associated with a content page. For example, when the content page owner logs into messenger server **850** through a messenger client **880**, messenger server **850** will communicate to other messenger client applications that the content page owner is now online and associated with a content page. The messenger client applications can then update their user interfaces accordingly. This provides for an additional means of receiving an indication that a contact is associated with a content page.

In one embodiment, system **400** can, during a user session, provide a notification that a content page associated with a contact in a user's messenger contact list has changed. Method **1100** of FIG. **11** illustrates a method for adding a visual indicator to a contact indicator in a user interface while the user is logged into messenger server **850**. At step **1110**, a content page change is saved. In some embodiments, step **1110** will consist of detecting that a change was made to a content page with or without a save of the changes.

In another embodiment, an owner of a content page can configure content page notifications. For example, a content page owner can indicate when notifications are sent (periodically or based on occurrence of an event), which modules and actions may trigger a notification, to which contacts or groups notifications should be sent, and which devices and channels should receive notifications (messenger clients, mobile phones, email, etc.).

In one embodiment, a content change detection includes the content page owner saving a change and indicating that the change should be published or otherwise broadcast to contacts having the content page owner in their messenger

contact list. In either embodiment, the content change can be detected by communicating the change to storage server **820**. In another embodiment, the change is communicated to ABCH **630** or some other server. In one embodiment, a change may include one or more of adding a new item, changing an existing item, or deleting an item in a component. For example, a blog entry may be added, a photo or entire album may be changed, or a song may be deleted from a play list by a user.

Upon being changed, storage server **820** determines which contacts the changes should be sent to. In one embodiment, storage server **820** derives the list from the intersection of contacts having permission to view the content page and contacts belonging to the content page owner's messenger reverse list. The contacts having permission to view the content page are retrieved from a permission list stored on storage server **820** using a permission list identifier. The contacts on the page owner messenger reverse list are those who have the page owner on their own messenger contact list. Thus, the reverse list members are those who have the page owner as one of their contacts displayed in messenger client **880** user interface.

Storage server **820** retrieves the permission list and the reverse messenger list at step **1120**. In one embodiment, the permission list identifier and the reverse messenger list are retrieved by storage server **820** from ABCH **630**. Storage server **820** than takes retrieves the permission list using the permission identifier list. Once both lists have been retrieved, storage server **820** generates a common contact list that includes the contacts found in both the permission and reverse messenger list at step **1130**.

Storage server **820** generates an alert for the changes made to the content page at step **1140**. In one embodiment, an alert is generated for changes involving a newly added component or a new entry for an existing component. The parameters of an alert may include the content page identifier, component identifiers, the most recent version or last modified date for the component and the content page, an action performed (for example, insert, change or delete), a new item indicator indicating if the change should cause a visual indicator to be displayed in a client interface, and a component summary for the changed component. An alert component summary can be similar to a content page version response component summary, except that an alert component summary relates to a specific component. The alert component summary includes a component identifier and an array of item identifiers. The component identifier is the same as that in the content page version response. The item identifier array is an array of identifiers for the children or items within a component that have changed. For example, the item array may include an identifier for a deleted photo in a photo album, a changed blog entry, a new song in a play list, or some other item.

Alerts can be sent in XML format. In some embodiments, the alerts may be encoded by storage server **820**. An example of an alert in XML that is not encoded, or has been decoded, is shown below:

```
<NotificationData xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<SpaceHandle>
  <ResourceID>1pPoLF3i0OVO4J1K_FBbfiKA!101<\ResourceID>
<SpaceHandle>
  <LastModifiedDate>2004-08023T11:33:47.0693750-07:00
<\LastModifiedDate>
  <Action>Add<\Action>
  <HasNewItem>true<\HasNewItem>
```

-continued

```
  <ComponentSummary>
    <Component xsi:type="MessageContainer">
    <ResourceID>1pPoLF3i0OVO4J1K_FBbfiKA!102<\ResourceID>
    <\Component>
    <Items>
        <Item xsi:type="Message">
      <ResourceID>1pPoLF3i0OVO4J1K_FBbfiKA!103<\ResourceID
      >
        <\Item>
    <\Items>
  <\ComponentSummary>
<\NotificationData>
```

Alert server **840** sends the alert package with the common contact list derived in step **1030** to messenger server **850 460** at step **1150**. Messenger server **850** receives the alert and determines which of the common contacts are signed into messenger server **850** at step **1160**. Messenger server **850** then sends the alert package to those messenger client **880** applications associated with those contacts at step **1170**. In some embodiments, the alert may be routed to a messenger client **880**, browser, mobile device, email server **872** or other entity depending on the system. When a contact that is to receive an alert is not signed in, the alert package is ignored. The contact will receive the updates at the next log-on when messenger client **880** compares the summary module cache information to the content page latest version information.

Messenger client **880** receives the alert package at step **1180**. At step **1190**, messenger client **880** processes the alert and determine if a visual indication should be provided in the user interface. First, messenger client **880** determines if the alert is associated with a contact that is included in the user's messenger contact list (e.g., has not been deleted from the messenger contact list). Messenger client **880** then determines whether the last modified date information is more recent than the last modified date for the component stored in local memory. In one embodiment, the client will only make this determination if the new item indicator in the list indicates that a visual indicator should be provided (thereby indicating that there is new content in at least one component). If the alert is associated with a contact in the messenger contact list and the last modified date for at least one component is more recent than that for the cached component, messenger client **880** will provide an indicator corresponding to the contact at step **1092**. Otherwise, operation continues to step **1194** where messenger client **880** does not provide a visual indicator for the particular contact. The client also stores the alert package information, including the last date modified information for both the component and the component items and the changes to the summary module indicated by new components.

When a messenger client **880** receives input indicating a summary module should be displayed, messenger client **880** should determine from where to load the summary module. The input may include selection, such as a right mouse button click, on a contact presence indicator, a contact identifier, or some other visual indicator associated with a content page for a contact. Method **1200** of FIG. **12** illustrates a method for determining a source for a summary module. Messenger client **880** receives a summary module request at step **1210**. Messenger client **880** then determines whether a cached version of the summary module is available at step **1220**. A cached version may be available if messenger client **880** has received the summary module previously. If no cached version is available, operation continues to step **1260**.

If a cached version is available, operation continues to step **1230** wherein the system determines if the time stamp

received in the content page version response at login is more recent the time stamp associated with the cached version of the summary module. If the time stamp from the content page version response is more recent than the timestamp of the cached summary module, operation continues to step **1260**. If not, the system determines if an alert was received that indicates the content page has changed at step **1240**. In one embodiment, if an alert was received indicating the content page has changed, a new item indicator stored by messenger client **880** will indicate this. Thus, messenger client **880** may retrieve the value of the indicator to determine if an content page change alert was received. If an alert has been received at step **1240**, operation continues to step **1260**. If no alert has been received at step **1240**, operation continues to step **750**. At step **1260**, the system has determined that the cached version of the summary module may be outdated and the most recent version of summary module data should be requested. At step **750**, messenger client **880** determines that no change has occurred to the content page since the last time summary module data was loaded. Accordingly, the summary module should be loaded from the cached version.

In some embodiments, messenger client **880** may maintain an indicator that indicates whether the content page associated with a contact has a new item, for example a HasNewItem flag. Thus, for each contact, if the time stamp received in the content page version response is more recent than the cached timestamp, a changed content page alert is received, or there is no cached version, the new content flag will contain a value indicating the content page and corresponding summary module data has changed. Rather than going through method **1200**, the system will check the value of the new content flag to determine where the summary module should be loaded from.

FIG. **13** illustrates a method **1300** for retrieving a summary module. Messenger client **880** receives a request to view a summary module for a user at step **1310**. In some embodiments, messenger client may poll the content page server **810** or storage server **820**. In this case, a request for summary module data can be triggered when the poll returns an indication that the summary module has been changed. Once the request is received, messenger client **880** transmits a summary module content request to content page server **810** for the summary module at step **1320**.

In one embodiment, messenger client **880** transmits a summary module data request directly to storage server **820**. In this case, storage server **820** can transmit a summary module data response directly to messenger client **880**. The summary module data request and summary module data response are discussed in more detail below.

The summary module content request can have parameters including the content page identifier, the last modified date of the content page, a filter indicating which components to return content from, the component entry type, the number of entries for each type and the fields to return on the component children.

An example of a summary module content request is shown below.

```
Content-Type: text/xml; charset=utf-8
Content-Length: length
SOAPAction: "http://www.msn.com/webservices/spaces/v1/GetXmlFeed"
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
```

-continued

```
  <soap:Body>
    <GetXmlFeed xmlns="http://www.msn.com/webservices/spaces/
    v1/">
      <refreshInformation>
        <brand>string</brand>
        <market>string</market>
        <maxCharacterCount>int</maxCharacterCount>
        <maxElementCount>int</maxElementCount>
        <maxImageCount>int</maxImageCount>
        <spaceResourceId>string</spaceResourceId>
        <storageAuthCache>string</storageAuthCache>
      </refreshInformation>
    </GetXmlFeed>
  </soap:Body>
</soap:Envelope>
```

Content page server **810** receives the request and generates a summary module data request for storage server **820** at step **1325**. The request to storage server **820** includes a time stamp of the last view of the summary module by messenger client **880**. The time stamp may have a value of zero or false if the summary module has not been requested previously by messenger client **880**. The request may also indicate specific components of the summary module, and a number of child items. The number of child items may relate to the number of thumbnails requested, number of blog entries, number of songs, or some other data.

One example of the format for a summary module data request from a content page server **810** to a storage server **820** is shown below.

```
POST /StorageService/SpacesService.asmx HTTP/1.1
Host: storage.msn.com
Content-Type: text/xml; charset=utf-8
Content-Length: length
SOAPAction: "http://www.msn.com/webservices/storage/v1/
GetItemSummary"
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Header>
    <SpacesApplicationHeader
xmlns="http://www.msn.com/webservices/storage/spaces/v1">
      <ApplicationID>string</ApplicationID>
    </SpacesApplicationHeader>
    <SpacesIdentificationHeader
xmlns="http://www.msn.com/webservices/storage/spaces/v1">
      <Puid>long</Puid>
      <IPAddress>string</IPAddress>
    </SpacesIdentificationHeader>
  </soap:Header>
  <soap:Body>
    <GetItemSummary
xmlns="http://www.msn.com/webservices/storage/spaces/v1">
      <spaceSummaryRequest>
    <SpaceHandle>
      <ResourceID>string</ResourceID>
      <RelationshipName>string</RelationshipName>
      <Alias>
        <Name>string</Name>
        <NameSpace>string</NameSpace>
      </Alias>
    </SpaceHandle>
    <ComponentVersion>
      <ResourceID>string</ResourceID>
      <LastModifiedDate>dateTime</LastModifiedDate>
      <MaxReturn>int</MaxReturn>
    </ComponentVersion>
  </spaceSummaryRequest>
  <spaceRequestFilter>
    <SpaceFilterAttributes>Annotation</SpaceFilterAttributes>
    <FilterValue>int</FilterValue>
```

-continued

```
</spaceRequestFilter>
<itemTypeFilter>
  <ItemTypeFilter>
  <ItemType>Item or Space or MessageContainer or List or ListEntry
or Message or File or Folder or Photo or Document</ItemType>
  <ItemCount>int</ItemCount>
  <AttributesToReturn>
    <ItemType>boolean</ItemType>
    <ResourceID>boolean</ResourceID>
    <Owner>boolean</Owner>
    <Creator>boolean</Creator>
    <Size>boolean</Size>
    <Version>boolean</Version>
    <DateCreated>boolean</DateCreated>
    <DateModified>boolean</DateModified>
    <Relationships>boolean</Relationships>
    <Name>boolean</Name>
    <Annotations>boolean</Annotations>
    <UserRoleDefinition>boolean</UserRoleDefinition>
    <RoleDefinitionName>boolean</RoleDefinitionName>
    <PolicyName>boolean</PolicyName>
    <AclRegions>boolean</AclRegions>
    <Flags>boolean</Flags>
  </AttributesToReturn>
  </ItemTypeFilter>
  <ItemTypeFilter>
    <ItemType>Item or Space or MessageContainer or List or
ListEntry or Message or File or Folder or Photo or Document</ItemType>
    <ItemCount>int</ItemCount>
    <AttributesToReturn>
      <ItemType>boolean</ItemType>
      <ResourceID>boolean</ResourceID>
      <Owner>boolean</Owner>
      <Creator>boolean</Creator>
      <Size>boolean</Size>
      <Version>boolean</Version>
      <DateCreated>boolean</DateCreated>
      <DateModified>boolean</DateModified>
      <Relationships>boolean</Relationships>
      <Name>boolean</Name>
      <Annotations>boolean</Annotations>
      <UserRoleDefinition>boolean</UserRoleDefinition>
      <RoleDefinitionName>boolean</RoleDefinitionName>
      <PolicyName>boolean</PolicyName>
      <AclRegions>boolean</AclRegions>
          <Flags>boolean</Flags>
        </AttributesToReturn>
      </ItemTypeFilter>
    </itemTypeFilter>
  </GetItemSummary>
</soap:Body>
</soap:Envelope>
```

The summary module data request is sent to storage server **820** at step **1330**.

In one embodiment, before providing the requested data to content page server **810**, storage server **820** confirms whether or not the requesting user has permission to view the summary module at step **1340**. Storage server **820** determines whether the summary module data request included the permission list identifier for the content page at step **1340**. If the permission list identifier was included, operation continues to step **1355**. Otherwise, storage server **820** requests the permission list identifier from ABCH **630** using the content page identifier. At step **1350**, ABCH **630** receives the storage request, retrieves the permission list identifier and provides the identifier to storage server **820**. Operation then continues to step **1355**.

Storage server **820** retrieves the permission list using the permission list identifier and determines if the user has authorization to view the content page using the permission list in ABCH at step **1355**. If the user does not have permission, the storage module replies with an error message to content page server **810** at step **1357**. Content page server **810** then sends a message to messenger client **880** indicating that the user does not have permission to view the summary module or that the card is not available. If the user is on the permission list, the user has authorization to view the content page and operation continues to step **1360**.

Storage server **820** processes content page server **810** request and sends a summary module data response to content page server **810** at step **1360**. Processing the request can include accessing the components and child items that are specified by the filter information of the request and have a last modified date that is more recent then the last modified date provided by the client. Storage server **820** may return an error if either the content page identifier is invalid or the permission to view has been denied.

The summary module data response can have parameters including the content page identifier, the date the content page was last modified, a new item indicator indicating if any components have been changed since the last modified data provided by the client, and a component summary for each component. The component summary provides the identifier and time stamp as in the above discussion.

An example of the a summary module data response format is shown below.

```
HTTP/1.1 200 OK
Content-Type: text/xml; charset=utf-8
Content-Length: length
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <GetItemSummaryResponse
xmlns="http://www.msn.com/webservices/storage/v1">
      <GetItemSummaryResult>
        <SpaceHandle>
          <ResourceID>string</ResourceID>
          <RelationshipName>string</RelationshipName>
          <Alias>
            <Name>string</Name>
            <NameSpace>string</NameSpace>
          </Alias>
        </SpaceHandle>
          <LastModifiedDate>dateTime</LastModifiedDate>
        <ComponentSummaries>
          <ComponentSummary>
            <Component xsi:nil="true" />
            <Items xsi:nil="true" />
          </ComponentSummary>
          <ComponentSummary>
            <Component xsi:nil="true" />
            <Items xsi:nil="true" />
          </ComponentSummary>
        </ComponentSummaries>
      </GetItemSummaryResult>
    </GetItemSummaryResponse>
  </soap:Body>
</soap:Envelope>
```

Upon receiving the summary module data response, the content page summary processes the data and transmits the processed content to messenger client **880** at step **1370**. The processing may include placing the content in the correct language, removing header and formatting information from blog entries, and other tasks. An example of a summary module content response sent from content page server **810** to messenger client **880** is shown below.

```
HTTP/1.1 200 OK
Content-Type: text/xml; charset=utf-8
Content-Length: length
<?xml version="1.0" encoding="utf-8"?>
<space xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <contactCard xmlns="http://www.msn.com/webservices/spaces/v1/">
    <storageAuthCache />
    <elements returnedMatches="2" totalMatches="3">
      <element type="SpaceTitle">
        <title>My Space</title>
        <url>http://spaces.msn-int.com/members/someone/</url>
      </element>
      <element type="Blog">
        <subElement lastUpdated="2004-08-30T16:05:10.7400000-07:00"
type="Post">
<description>スペ_スについての説明やスペ_スについての説明やスペ_
スについての説明やスペ_スについての説明やスペ_
スについての説明やスペ_スについての説明やスペ_
スについての説明やスペ_スについて</description>
          <title>TEST</title>
          <tooltip>Comments: 0</tooltip>
          <url>http://spaces.msn-int.com/members/someone/Blog/cns!1p5HyjrG8J-
ymsZzDHrEzetA!138.entry</url>
        </subElement>
        <title>Blog:</title>
        <url>http://spaces.msn-int.com/members/someone/</url>
      </element>
      <element type="Album">
        <subElement
xsi:type="spaceContactCardElementsElementPhotoSubElement"
lastUpdated="2004-08-30T12:35:00.0000000-07:00" type="Photo">
          <description>Photos</description>
          <title>asdfsd</title>
          <tooltip>TitleForAlbum
asdfsd</tooltip>
          <url>http://storage.msn-
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Next, at step **1380**, messenger client **880** receives the summary module content response. Messenger client **880** stores the information in the response and generates the summary module. In some embodiment, the information stored by the client may include one of more of the content page, component page and component child identifiers and timestamps, the HasNewSpace flag, and the permission list identifier.

In one embodiment, the summary module can be viewed through a messaging service implemented on a network browser, for example a web browser. An IM user interface implemented as a web service can have the same user interface and user experience as a messenger client **880**. The communication between content page server **810**, storage server **820**, and ABCH **830** are the same as well. The only changes in protocol take place between messenger web service **860** and content page server **810**. A method **1400** for adding a visual indicator to a IM user interface implemented as a network browser is illustrated in FIG. **14**. A polling event is triggered at step **1410**. The web messenger does not have a dedicated connection to messenger server **850** as messenger client **880**s do. Thus, to determine if content pages have been updated, the web messenger can periodically poll messenger server **850** for alerts. The polling event may be triggered by an internally generated event, such as the expiration of the period of time, or by user input. Once a polling event is triggered, the browser transmits a content page version request to the messenger web server at step **1420**. In one embodiment, the request of step **1420** is made in the form of an HTTP request. Upon receipt of the request, the messenger web server transmits a request to messenger server **850** for changed content page information for the contact pages associated with the user's messenger contact list at step **1430**.

Messenger server **850** determines the changes at step **1440**. In one embodiment, messenger server **850** accesses any alerts received that relate to the messenger contact list. In another embodiment, messenger client **880** retrieves the most recent timestamp information for the appropriate content pages from storage server **820**. Messenger server **850** then transmits a reply to the messenger web server at step **1450**. In one embodiment, the changes to be made to the web messenger for any required visual indicators are provided as java script events. The java script events indicate how the network browser is updated to include visual indicators for contacts having changed content pages. The message is then received by the web messenger and the user interface is updated at step **1460**.

Once the visual indicators are provided in the network browser, a user can select a visual indicator to view a summary module. In one embodiment, the summary modules can be implemented as an interface within a separate network browser. A method **1500** for providing a summary module by an IM interface provided in a network browser is illustrated in FIG. **15**. Method **1500** begins at step **1510** wherein input is received selecting a visual indicator. In one embodiment, the visual indicator is a link to a summary module page on a network. At step **1520**, messenger web service **860** requests summary module data from content page server **810**. The summary module data request is received by content page server **810** and processed at step **1530**. In one embodiment, the request is processed as discussed with respect to steps **1325** through **1360** of FIG. **13**. After storage receives the summary module data, the data is packaged for the messenger web server and transmitted at step **1540**. The messenger web server receives the package and provides the summary module at step **1550**. In one embodiment, the summary module data is packaged as HTML and allows for the summary module to be provided as a separate web page.

In one embodiment, a summary module can be provided through an email web service. Similar to the web messenger service discussed with reference to FIGS. **14** and **15**, email web services are implemented through a web browser. Thus, the summary module could be provided in a separate browser alongside an email management interface or within an email management interface provided in a network browser. A method for providing a visual indicator and a summary module for an email web service is the same as that of methods **1400** and **15000**, except that the web browser communicates with content page server **810** through an email server **872** rather than a messenger web service **860** and the messenger web server. Thus a summary module is implemented as a web site by the content page web service.

FIGS. **16-18** illustrate examples of providing a summary module in an email management interface provided in network browser, for example a web browser. FIG. **16** includes network browser **1610**, email interface page **1620** and summary module **1630**. The email interface page **1620** allows a user to generate an email. The summary module **1630** is provided as a signature in the email generated by the user. FIG. **17** includes network browser **1710**, user contact page **1720** and summary module **1730**. FIG. **18** includes network browser **1810**, contact list page **1820** and summary module **1830**.

We claim:

1. A method for providing a web page content change notification over a network, comprising:

determining a content change has occurred in at least one portion of a web page having an owner;

selecting one or more contacts associated with the web page owner to receive a notification of the content change, the one or more contacts selected from a list of contacts maintained in an instant messaging service, each selected contact having (i) authorization by the web page owner to view the portion of the web page where the content change occurred, and (ii) an associated instant messaging contact list to which the contact has added the web page owner; and

transmitting the notification via the instant messaging service to a messenger client of each of the one or more contacts selected to receive a-notification of the content change, the notification including summary information, the summary information including at least one and not more than a predetermined number of displayable components of the web page and an indication of the order in which the displayable components were added to the web page, the predetermined number of displayable components being less than the total number of displayable components in the web page, wherein when each contact among the one or more contacts selected to receive the notification logs in to the instant messaging service, said each contact's associated instant messaging contact list is presented, automatically listing

a name of the web page owner,

an image from the owner's web page displayed proximate the owner's name, and

a visual indicator displayed adjacent the owner's name, indicating that a content change has occurred in at least one portion of the web page associated with the owner, the visual indicator being selectable to request the owner's web page data.

2. The method of claim **1**, wherein:

determining a content change includes:

receiving web page version request data from user; and

comparing web page data to the web page version request data, said transmitting the notification including transmitting the notification to the user.

3. The method of claim **2**, wherein:

determining a content change includes:

determining if the web page data is more recent than the web page version request data.

4. The method of claim 1, wherein:
determining a content change includes:
detecting new content being saved to a data storage device.
5. The method of claim 1, wherein:
transmitting the notification to the one or more contacts includes:
transmitting the notification to an alert server.
6. The method of claim 1, wherein:
the web page includes one or more components, the one or more components including web page data and a filter parameter, the filter parameter determining if a notification should be generated for a content change in a web page component.
7. The method of claim 6, further comprising:
receiving the notification at a user interface;
providing a visual indicator at the user interface in response to notification.
8. A method for providing a web page content change notification, comprising:
providing an instant messaging contact list for a user to manage one or more contacts shown in the instant messaging contact list, the instant messaging contact list providing, for each contact associated with a web page, an image from the contact's web page proximate to an identifier of the contact;
determining that content on a web page associated with a contact identified in the instant messaging contact list has changed by,
sending a web page version request for the web page associated with the contact;
receiving version information for the web page in response to the web page version request;
determining if the received version information for the web page is more recent than a cached version of the web page;
receiving a notification for the user that content on the contact's web paged has changed, if the user has been authorized by the contact associated with the web page to view the content that changed on the web page, the notification including summary information, the summary information including at least one and not more than a predetermined number of displayable components of the web page and an indication of the order in which the displayable components were added to the web page, the predetermined number of displayable components being less than the total number of displayable components in the web page; and
providing a visual indicator in the user's instant messaging contact list indicating that a content change has occurred for the web page, the visual indicator being selectable to request the contact's web page data.
9. The method of claim 8, wherein:
said receiving a notification includes:
receiving an alert package.
10. The method of claim 9, wherein:
said providing a visual indicator includes:
providing a visual icon adjacent the image from the contact's web page shown in the instant messaging contact list.
11. The method of claim 8, wherein:
the web page includes one or more components, each of the one or more components including web page data and a filter parameter, the notification indicating the components having changed web page content.
12. The method of claim 11, wherein:
providing a visual indicator includes:
determining that one or more of the components having changed content indicated in the notification match a cached list of components; and
providing a visual indicator representing the matched components.
13. The method of claim 8, wherein:
the instant messaging contact list is provided by a network browser.
14. The method of claim 13, wherein:
the instant messaging contact list is a messaging interface.
15. The method of claim 8, wherein:
the instant messaging contact list is provided by a standalone client.
16. A system for providing a notification over a network related to a web page having content, comprising:
a web page having content, wherein the web page comprises one or more components, and wherein each component includes different types of web page data;
a data storage device having a list of authorized viewers associated with the web page, wherein each authorized viewer on the list has (i) been authorized by the web page owner to view the content, and (ii) added the web page owner to the viewer's own messenger contact list; and
a server with access to the web page content, the server configured to determine a change in content of the web page, and if a content change occurs, generate an alert package for the determined content change, wherein the alert package includes at least a component identifier identifying the changed component, and send the alert package to the list of authorized viewers as the notification, the notification including summary information, the summary information including at least one and not more than a predetermined number of displayable components of the web page and an indication of the order in which the displayable components were added to the web page, the predetermined number of displayable components being less than the total number of displayable components in the web page; and
a client associated with each authorized viewer for receiving the alert package, wherein when an authorized viewer logs in to their instant messaging service, the client automatically provides
an instant messaging contact list including a name for the web page owner,
an image from the owner's website displayed adjacent the web page owner's name, and
a visual indicator displayed adjacent the web page owner's name indicating that a content change has occurred in at least one portion of the web page associated with the web page owner, the visual indicator being selectable to request data from the owner's web page.
17. The system of claim 16, wherein:
the server having access to a web page version information, the notification including the web page version information.
18. The system of claim 17, wherein:
the web page includes one or more components having web page data, the notification providing web page version information for each component having changed content.
19. The system of claim 16, wherein:
the notification includes a new content indicator, the new content indicator indicating a content change for the web page.

20. The system of claim **16**, further comprising:

a client providing a user interface, the client configured to receive the alert and display a visual indicator on the user interface indicating the changed content of the web page.

21. The system of claim **20**, wherein:

said server is configured to send the alert to the client at initialization of a communication session by the client.

22. The system of claim **20**, wherein:

said server is configured to send the alert to the client when a content change occurs in web page.

23. One or more processor readable storage devices having processor readable code embodied on said processor readable storage devices, said processor readable code for programming one or more processors to perform a method comprising:

determining a content change has occurred in a web page having an owner;

accessing a common contact list indicating one or more contacts that (i) have authorization from the web page owner to view a notification of the content change, and (ii) are listed on the web page owner's instant messaging contact list; and

transmitting the notification to the one or more authorized contacts, the notification including summary information, the summary information including at least one and not more than a predetermined number of displayable components of the web page and an indication of the order in which the displayable components were added to the web page, the predetermined number of displayable components being less than the total number of displayable components in the web page, wherein when an authorized contact logs in to their instant messaging service, an instant messaging contact list is automatically provided listing

a name of the web page owner as a contact,

an image from the owner's web page, and

a visual indicator adjacent the owner's name, indicating that a content change has occurred in the web page associated with the owner.

24. One or more processor readable storage devices according to claim **23**, wherein:

each of the authorized contacts are associated with a contact list that include the owner.

25. One or more processor readable storage devices according to claim **23**, wherein:

the notification indicates when the content change occurred.

26. One or more processor readable storage devices according to claim **23**, wherein:

the notification indicates the web page has changed.

27. One or more processor readable storage devices according to claim **23**, wherein:

the web page includes one or more components, the one or more components including web page data and a filter parameter, the filter parameter determining if a notification should be generated for a content change in a web page component.

28. One or more processor readable storage devices according to claim **27**, wherein:

the one or more filter parameters are configured by the owner.

29. One or more processor readable storage devices according to claim **24**, wherein:

the notification is sent to a messenger server.

30. The method of claim **1**, wherein the visual indicator is selectable by each authorized contact to request the owner's web page data.

31. The method of claim **8**, wherein the visual indicator is selectable by the user to request the contact's web page data.

32. The system of claim **16**, wherein the visual indicator is selectable by an authorized viewer to request data from the owner's web page.

33. The one or more processor readable storage devices of claim **23**, wherein the visual indicator is selectable by each authorized contact to request data from the owner's web page.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

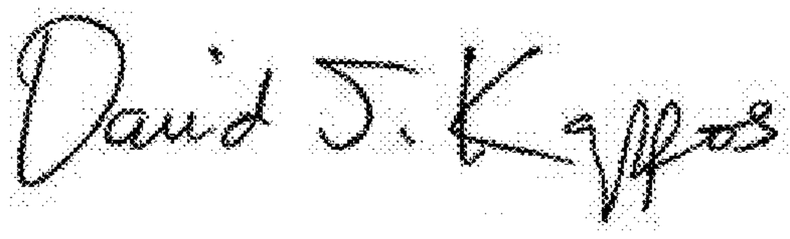
CERTIFICATE OF CORRECTION

PATENT NO. : 8,090,776 B2
APPLICATION NO. : 10/978558
DATED : January 3, 2012
INVENTOR(S) : Michael I. Torres et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 1, line 11, delete "Tones," and insert -- Torres, --, therefor.

Signed and Sealed this
Twenty-eighth Day of February, 2012



David J. Kappos
Director of the United States Patent and Trademark Office